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ABSTRACT

The ESY Analysis Aids are a collection of materials and procedures related to and organized for use in making decisions concerning year-round school program alternatives. They are restricted largely to procedures dealing with the budgetary impact of school calendar manipulation, but can be used as a guide in monitoring progress in an ESY feasibility study. What is presented here is an initial set of procedures which, when taken together, assist in the simulation of the budgetary impacts of alternative extended school year programs. An eventual goal is for the analysis aids to evolve towards, or be replaced by, more general, automated capabilities, to assist decisionmaking over a much broader set of school planning and management problems. The modular, looseleaf, indexed form in which these materials are presented should permit the inclusion of new materials as they become available. Projection techniques and algorithms are presented, as well as a flowchart of the general sequence of intended or probable activities in use of ESY materials, with major sub-branches also charted. (Pages 8-13, 25, 29-30, 34, and 74 may reproduce poorly.) (Author/EA)

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EXTENDED SCHOOL YEAR ANALYSIS AIDS

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EA 005 474

THE ESY DECISION TREE

Components and Usage

PART

I. Introduction

An overview of the purposes, scope, limitations and general procedure for use of the decision tree and its components.

II. The ESY Decision Tree (Decision Flow Diagram)

A flowchart of the general sequence of intended or probable activities in use of the ESY material with major sub-branches also charted. Useful as a guide in monitering an ESY feasibility study.

III. Guide to ESY Literature and Information Services -- Procedure A

A synopsis of the various bibliographies, the ESY library and the various ESY information services available from SWREC.

IV. Criterion Identification and Goal Setting -- Procedures B_1 and B_2

A collection of prompting aids. (To be developed)

V. Selecting and ESY Plan -- Procedure C

A set of materials containing information and procedures to guide the identification of an ESY plan for budgetary analysis.

VI. "Netting-out" the Traditional Plan -- Procedures D_1 and D_2

Materials for use if it is desired to record and remove the expenditures and revenues associated with summer school and other programs which augment the traditional plan.

VII. Analysis of the Impact of the ESY Plan Upon Expenditures -- Procedures E_1, E_2, ... E_n

A collection of routines for analysis of the effect of the ESY plan upon the various budgetary expenditure categories.

VIII. Analysis of the Impact of the ESY Plan Upon Revenues -- Procedures F_1, F_2 ... F_n

A collection of routines for analysis of the effect of the ESY plan upon the various budgetary revenue categories.

IX. Re-augmenting the ESY Plan -- Procedure G

Materials to prompt the 'adding back' of expenditures and revenues for programs to replace summer school, etc., if removed in Procedure D.

X. Implementation -- Procedures I_1, I_2, . . . I_n

Envisioned as materials and services useful once a decision to implement and ESY plan has been made. The only SWREC activity in this area at present is associated with identifying and securing relevant materials.

XI. Evaluation -- Procedures J_1, J_2, . . . J_n

More general capabilities developed independent of ESY activities but useful nonetheless. (To be added at a later date)

XII. General Appendix and Attachments

XIII. Index

PART I: INTRODUCTION

An overview of the purposes, scope, limitations and general procedure for use of the analysis aids, i.e., the Decision Tree and its components.

The ESY Analysis Aids are a collection of materials and procedures related to and orgunized for use in making decisions concerning year-round school program alternatives. They are, at the moment, restricted largely to procedures to deal with the budgetary impact of school calendar manipulation. The term Decision Tree is used to refer to the manner in which they have been articulated and packaged. Intelligent decision making is sufficiently complex as to do great violence to the 'tree' analog. The user is expected to branch and cycle more intelligently than may be indicated in the decision-flow outline. (See Part II: The ESY Decision Tree (Decision-flow Diagram).

Repeatedly in the Analysis Aids projection techniques and algorithms are presented. A few words of caution about their use seem in order.

Projection techniques, algorithms, etc., are nothing more than attempts to represent the real world in simpler terms. This is called modeling. The perfect model is the 'real world'. Any simpler model contains errors. The goal is to create models which suffice for the purpose at hand. A problem that arises in the creation of models is that the more generally applicable they are intended the more complex they become -- more like the real world. Yet to be useful the model must be relatively simple, else the decision maker will find a 'better' model. In all honesty it is difficult to create models which are both easy to use and good enough to supplant the model in the head of the sage administrator, which, after all, has a certain quality of known reliability.

A problem with the use of any model (algorithm, projection technique, etc.) is that the results will be no better than the data that are used as basic input. Thus, there is real challenge just to provide input data, particularly when that data itself must be in the form of an assumption or an extrapolation as is, for example, the case with respect to input of data related to eventual salary schedul e impacts of an ESY program.

The outline of ESY Decision Tree components might lead one to expect a more complete system than exists at the time of this writing (June 1972). Actually the outline provides a framework upon which to hang the various component parts as they become available. A process of continued evolution is envisioned, with new capabilities being added and older ones replaced with superior alternatives or upgraded ones. An eventual goal is for the analysis aids to evolve towards or be replaced by more general, automated capabilities, to assist decision making over a much broader set of school planning and management problems.

But what exists at present is, at best, an initial set of procedures which, when taken together, assist in the simulation of the budgetary impacts of alternative extended school year programs. Feedback leading to improvement of this capability is fervently solicited. The modular, looseleaf, indexed form in which these materials are presen ed will permit the inclusion of new materials as they become available.

Another intended feature of the Analysis Aids materials and procedures is flexibility with respect to level of detail. That is, we have sought to facilitate analysis at varying level of detail. One might want, for example, to give rather cursory attention to a particular ESY plan (or aspect of an ESY plan) at one point in time, and to perform a much more detailed, rigorous analysis later if such is warranted. The following chart illustrates this characteristic.

Detailed	An Intermediate Level	Highly Aggregated
detailed budget items within program and within school or attendance center	budgetary categories within school or attendance center	budgetary categories i.e., instruction transportation maintenance debt service general control etc. for the whole district

Analysis would logically proceed from high levels of aggregation towards more detail as the degree of commitment increases.

Chart x illustrates the relationship of the ESY Analysis Aids to the SWREC effort in the realm of the ESY problem solving process.

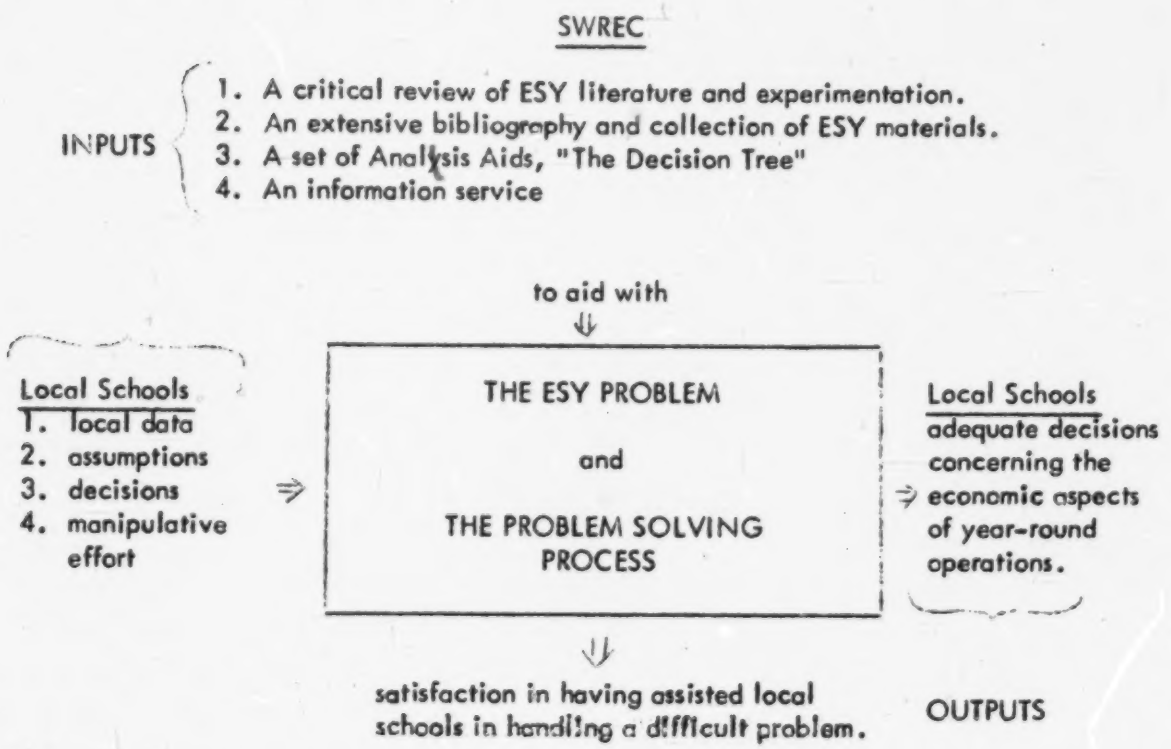

SWREC
INPUTS
1. A critical review of ESY literature and experimentation.
2. An extensive bibliography and collection of ESY materials.
3. A set of Analysis Aids, "The Decision Tree"
4. An information service
to aid with
Local Schools
1. local data
2. assumptions
3. decisions
4. manipulative effort
THE ESY PROBLEM
and
THE PROBLEM SOLVING PROCESS
Local Schools
adequate decisions concerning the economic aspects of year-round operations.
satisfaction in having assisted local schools in handling a difficult problem.
OUTPUTS

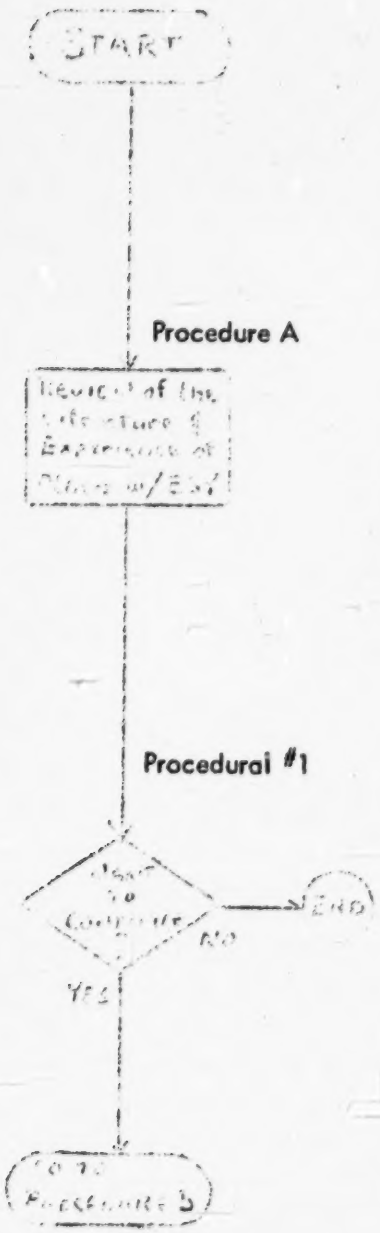
Chart x

PART II THE ESY DECISION TREE TRUNK

A flowchart of the general sequence of intended or probable activities in use of ESY materials..... with major sub-branches also charted. To be used as a guide in MONITERING progress in an ESY feasibility study.

PART II----THE DECISION - FLOW CHART:

A guide for MONITERING the ESY feasibility study
(see chart M1.a for complete general decision flow diagram)



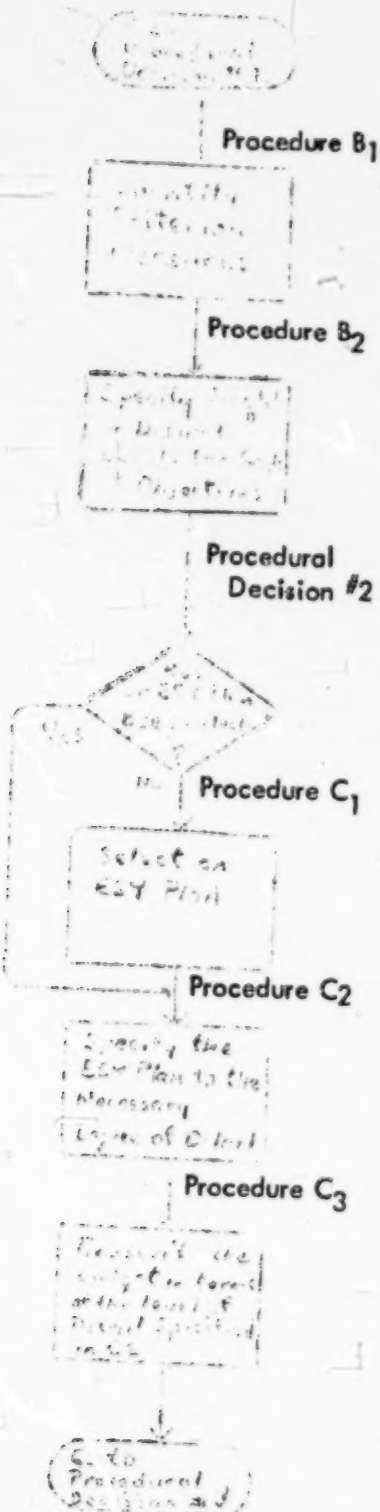
PART III----ESY Analysis Aids, Literature Review

A As with any problem one must begin somewhere (find a handle). The ideal beginning is to surv the problem situation and set forth goals and objectives. Alternative solutions are then evaluated, a selection made and implemented. The more global the approach the better--within limits of feasibility.

No doubt any attempt to deal with something as complex as rescheduling the school year will be fraught with compromise and expedience. Nontheless an attempt is made in this set of materials to guide an efficient and effective effort in the analysis of the budgetary effects of implementing and operating year-round school programs.

The process begins with a review of the experience of others. The user is directed to the relevant literature. See Section A. Documentation of Experience with Year-Round School.

PD1 Perhaps after studying the literature the user will have become so discouraged about the potential of year-round school that a decision to this activity can be made.



B_1 Any set of criterion measures for evaluation of alternative school schedules may be identified. However, this system is capable of formally handling only certain of those relating to the probable budgetary impact of an ESY plan.

B_2 While it may be intuitively apparent that one may postpone goal specification the user is encouraged to specify required or desired levels for the more important criterion measures at this point.

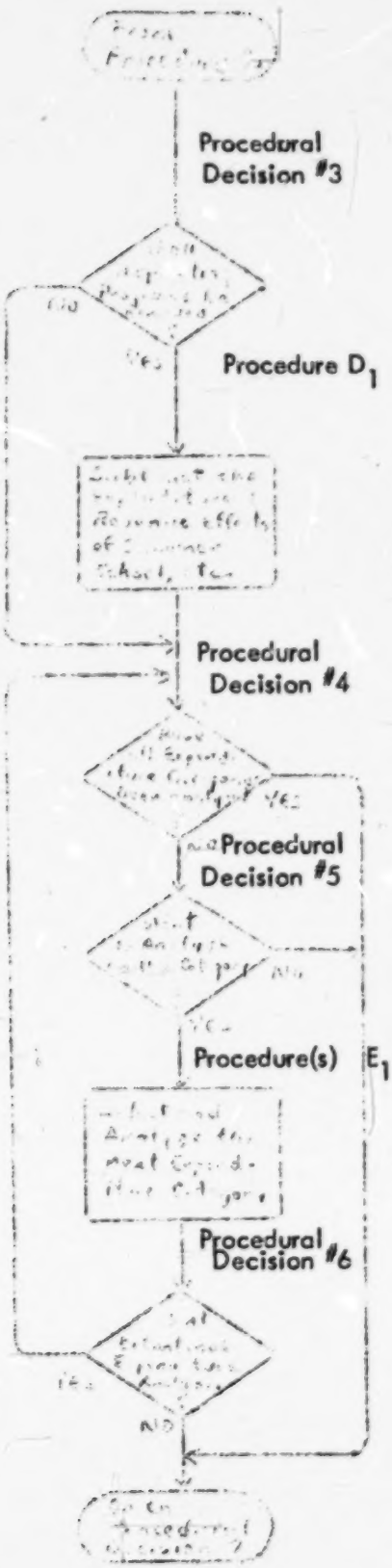
PART V----ESY Analysis Aid, Selecting an ESY Plan

PD 2 If the user has already an ESY Plan in mind to analyze Procedure C_1 may be omitted. Go instead to C_2.

C_1 An aid to the selection of an ESY plan Selecting Feasible School Calendar Alternatives is available See Section C. (Otherwise identified as Part V of the Analysis Aids)

C_2 See Section C. (same as above.....)

C_3 To ensure uniformity of analysis and consistency with objectives established in C_2 the budget should be transcribed at the level of de ail specified in C_1.



PART VI----ESY Analysis Aids, 'Netting-out' the Traditional Plan.

PD 3 Summer school and other programs augment the traditional school program. They create expenditures and generate revenue. A decision as to whether the analysis shall ignore or take account of the ramifications of modifying these programs must be made.

D_1 If the user desires to attempt to account for the impact of modifying these supplementary programs Procedure D_1 subtraction of the expenditures and revenues associated with these programs, should be completed.

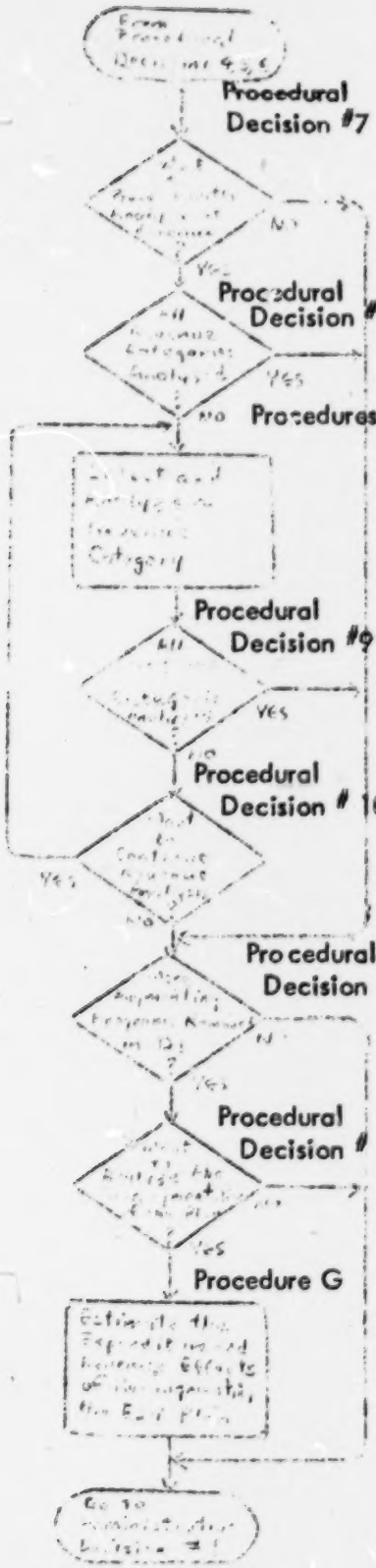
PART VII----ESY Analysis Aids. Expenditure Analysis, budget simulation.

PD 4 When all expenditure categories have been analysed to the degree desired the user moves on to procedural decision # 7, revenue analysis.

PD 5 The user may decide to omit analysis of certain expense categories which are felt be insensitive to the ESY Plan.

E A series of separate and somewhat differing analytic procedures described in Section E are employed to estimate the budgetary effects of the ESY plan upon each of the several expenditure categories. A record of their cumulative effect is maintained throughout the process. See Section E.

PD 6 At any point in the analysis the user may assess the promise of the ESY plan being evaluated with respect to the traditional budget and the goals and objectives established earlier. A decision to halt or continue is in order at any time.



PART VIII----ESY Analysis Aids, Revenue Analysis Budget Simulation

PD 7 The user (if favorably impressed with the expected cost of the ESY plan) may elect to undertake analysis of the income effects of the plan.

PD 8 When all revenue categories have been evaluated move on to procedural Decision #11.

An analysis of the revenue effects of the ESY plan. In a manner similar to that used for analysis of the expenditure effects. See Section F.

PD 9 When all revenue categories have been evaluated move on to Procedural Decision #11.

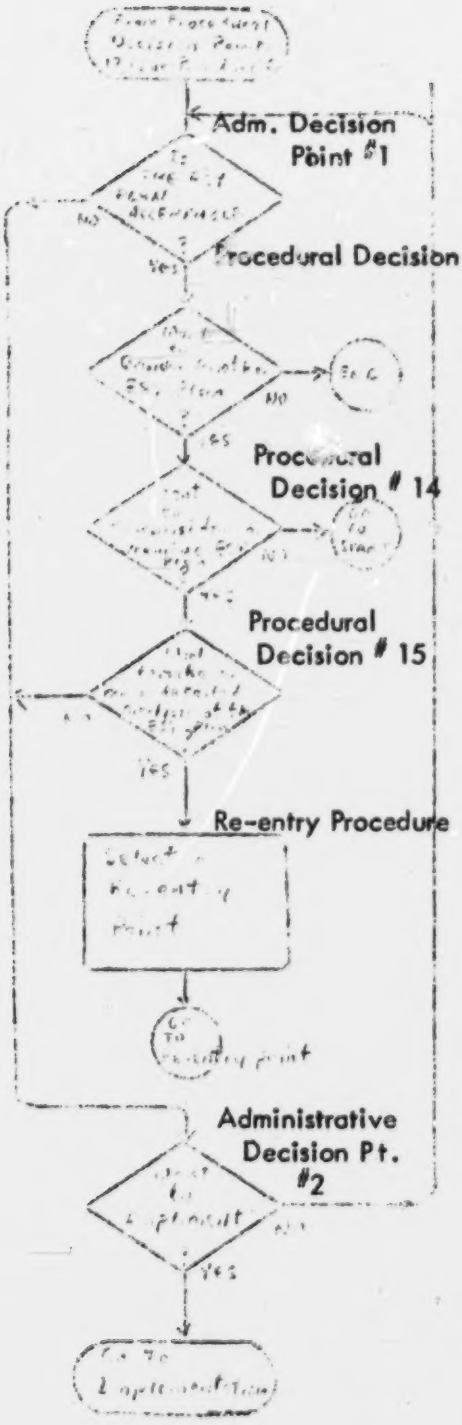
PD 10 Similar to Procedural Decision #9. As with analysis of expenditure categories the user may decide to forgo detailed analysis of certain 'insensitive' revenue sources. A cumulative report of the ESY plan's effect upon revenues is maintained throughout the process. See Section F.

PART IX----ESY Analysis Aids, Re-augmenting the ESY Plan

PD 11 If the summer school or other augmenting programs were not deleted in Procedure D the user Proceeds to Administrative Decision Point #2.

PD 12 If summer school, etc. were deleted in Procedure D, the user may want to 'add back' programs to accomplish certain goals and objectives.

G The user estimates the expenses and revenues generated by programs (summer school, etc.) replacing those removed in Procedure D. (See Section G).



AD 1 Is the ESY Plan, as evaluated, acceptable? This decision may well be based upon comparison of the expected performance of the ESY plan, the traditional budget, and the previously established goals and objectives.

PD 13 Regardless of the acceptability or unacceptability of the ESY plan under consideration a decision to consider another ESY plan is in order.

PD 14 If a re-evaluation of a previously considered ESY plan is desired it will, perhaps, be conducted in more detail and perhaps against new standards.

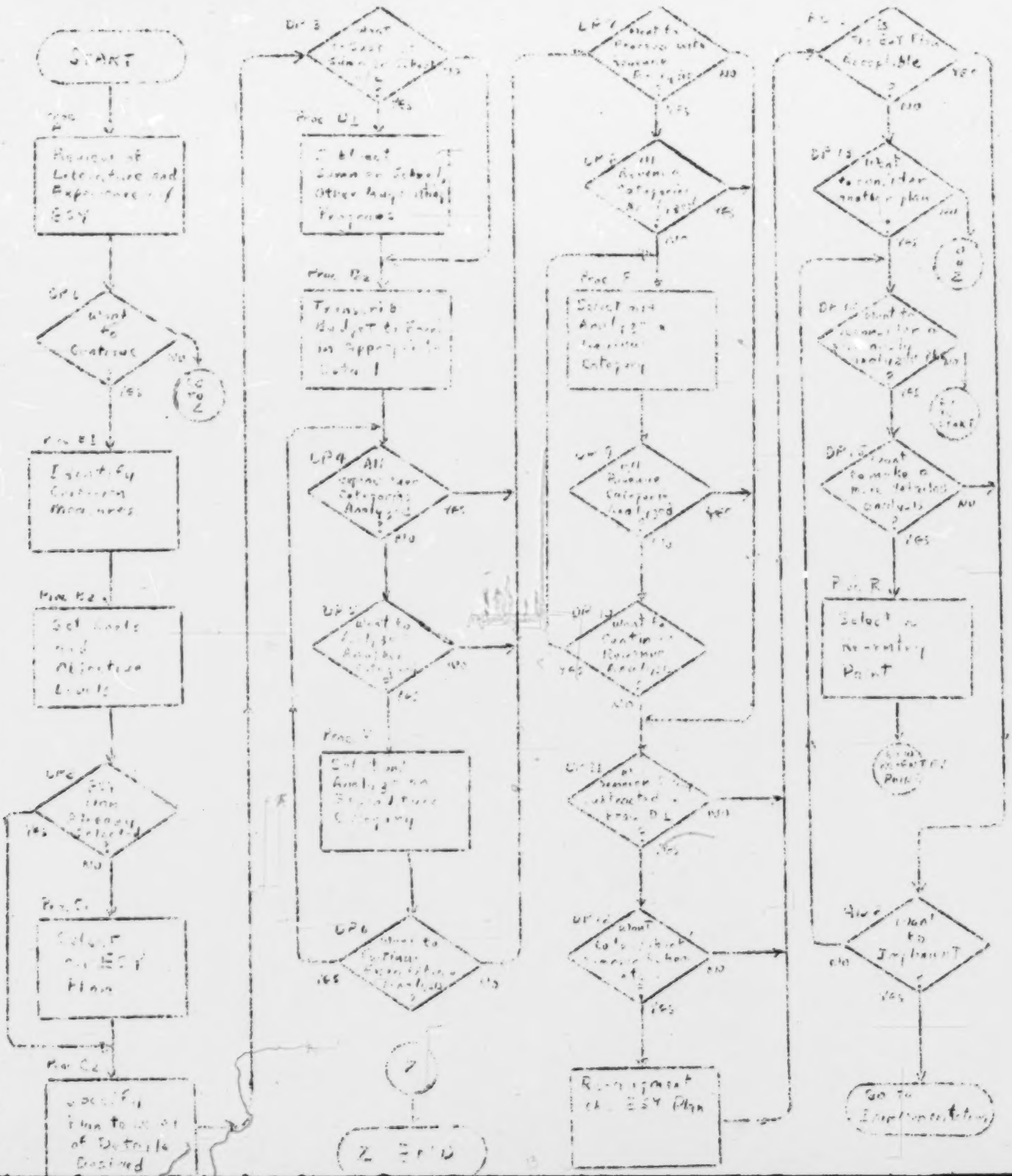
PD 15 The user may desire a more detailed analysis of an ESY plan which shows promise.

R-EP A decision to make a more detailed analysis may lead to re-entering the system at one of several points including:

a. review of goals and objectives
b. specification of the ESY plan
c. return to any category of expenditure or revenue analysis.
d. return to the procedures for dealing with removal or replacement of summer school and other operations.

AD 2 Here the ESY Plan is evaluated with respect to how well it meets the goals and objectives established earlier. A negative decision leads to potential reconsideration of the same plan or some other plan, or to an end of ESY plan analysis.

Imp The implementation component of this system has not been developed.


START
Review of Legislative and Experiences of ESY
DP1
Want to Continue
Proc E1
Identify Continuing Measures
Proc E2
Set Goals and Objective Levels
DP2
Proc C1
Select ESY Plan
Proc C2
Specify Time to Work Out Details Desired
DP3
Proc D1
Select Summer School Other Ways than Programs
Proc D2
Translate Budget to Funds in Appropriate Dollar I
DP4
All Revenue Categories Analyzed
DP5
Want to Analyze Revenue Categories
Proc F
Select and Analyze Revenue Category
DP6
Want to Continue Revenue Analysis
DP7
Proc G
Select and Analyze Special Purpose Category
DP8
Want to Continue Revenue Analysis
DP9
All Revenue Categories Analyzed
DP10
Proc B1
Select Summer School Alternatives
DP11
Want to Select Other Summer School
Proc B2
Select Alternative Plan
DP12
Want to Consider Another Plan
DP13
Want to Consider another plan
DP14
Want to Consider another plan
DP15
Want to make more detailed analysis
Proc R
Select an Alternative Plan
DP16
Want to Implement
Go to Implementation

PART III: GUIDE TO ESY LITERATURE AND INFORMATION SERVICES

A synopsis of the various bibliographies, the ESY library and the various ESY information services available from SWREC.

The Southeast Wisconsin Regional Education Center has prepared and is maintaining certain informational services related to the extended school year. These include:

A. An extensive library and file of ESY related materials - the most extensive known to exist anywhere. This file is organized topically . . . useful in problem solving. An author index card file permits quick access for a particular pre-identified document.

B. Bibliographies to aid in accessing pertinent ESY materials, as follows:

   1. A comprehensive bibliography of all materials in the ESY library. It is arranged alphabetically by author within chronological periods whose length varies with the volume of materials. The comprehensive bibliography is included in the analysis aids package as attachment K1.1 in the General Appendix.

   2. An annotated bibliography of the several most definitive items in the ESY library. This bibliography is included as attachment K1.2 in the General Appendix to the Analysis Aids.

C. An historical critique of thought and experimentation related to the extended school year. This is included as attachment K1.3 to the ESY Analysis Aids.

   Further position papers and bibliographies will be similarly attached to the ESY Analysis Aids.

D. An information service. The ESY library is available for use by interested persons at the SWREC site. In addition, the SWREC staff will respond to requests for copies of materials in the library. The charge will cover the copying costs, nominally $.05 per page for Xeroxing or $.10 per page for copying microfiche materials. In the case of the latter, the best solution may be to provide a microfiche at about $.65.

PART IV: CRITERION IDENTIFICATION AND GOAL SETTING

Procedures B_1 and B_2

A collection of prompting aids (to be generated).

It is clearly recognized that problem solving in the absence of goals and objectives is an anachronism. Discrepancies between observed performance and goals and objectives are the pointers which identify problems. Yet in the realm of educational programming these evaluative criterion are seldom made explicit and coherent. This itself is a worthy goal. But facilitation of its complete attainment is, at this time, clearly behond the scope of the ESY Analysis Aids.

The ESY Analysis Aids treat principally the budgetary impact of rescheduling the school year. While hoped for financial benefits are the principal reason for current ESY experimentation we all recognize that these are but a subset of the impacts of such an organizational change. It is largely left to the user to ensure that criterion measures sufficient to enable definition of the problems and evaluation of the expected performance of ESY plans in solving them are generated.

As evidence beomes available as to how this is successfully accomplished by schools conducting feasibility studies the ESY Analysis Aids will be updated to include it.

However, the working papers of the Analysis Aids are currently intended to facilitate evaluation in terms of budget comparison -- traditional vs. simulated ESY. Educational outcomes are ignored -- assumed unaffected.

PART V

ESY DECISION TREE
Section C, Selecting an ESY Plan
Procedure C1-----Selecting Feasible School Calendar Alternatives

Overview

The purpose of this set of materials is to assist the user in conceiving and determining the feasibility of a wide range of scheduling alternatives. The procedures are hopefully both simple enough to encourage their widespread use and at the same time comprehend the scheduling relationship sufficiently well to be useful. They essentially enable the exclusion of alternatives which, because they require more time than is available are infeasible.

The scheduling feasibility evaluation algorithm used does not concern itself with the particulars of where within the scheduling year holidays, vacations, weekends, teachers' conventions and instruction fall. Instead it deals with the aggregate quantity of each. It permits one simply to determine whether the quantities of time he specifies for instruction, vacation, etc. can be scheduled into an operating year. The actual scheduling of time against students, curriculum, staff and facilities is excluded from consideration at this stage of evaluation.

It is possible that a plan that is technically feasible in principle may later be deemed infeasible for other reasons. For example, staggered attendance plans may result in unacceptable pupil : teacher ratios for a plan that had appeared feasible in terms of calandar time allocation. Encounter with such problems may lead to innovative solutions which enhance the quality of education. But that is another matter .

Variables

The variables involved in the scheduling relationship, as modeled here, are the following:

1) Schooldays: the length of time that school is 'held'* for each student. See 3 and 5.
2) Vacation: the length of time that school is not 'held' for any student, i.e., no student is receiving instruction. Vacation does not include weekend days not used for instruction or holidays and teachers' convention days.
3) Holidays: actual legal holidays or days to compensate for legal holidays when they occur on a weekend. Wisconsin State Law considers school to be 'held' on as many as five specified holidays.
4) Tachers' conventions: days used for teachers' conventions. As with holidays the state considers school to be 'held' on up to two such days.
5) Saturdays used for instruction: the Wisconsin State Laws permit schools to schedule a student for instruction on up to five specified holidays.
6) Sundays: while Sundays are considered more a constant than a variable they are included so that the year remains a recognizable 365 or 366 days.
7) Attendance groups: the number of separate groups into which the student body is divided for attendance purposes. For example: the trimester plan requires three groups; the 45-15 plan requires four.

Constraints

Tradition, law, economics, and educational practice impose actual or potential constraints upon scheduling solutions. At this stage in order to facilitate creative thinking in our consideration of scheduling alternatives we shall eliminate or minimize all of them. Those imposed by educational practice are eliminated by the painful assumption that whatever else we do the quality of education remains constant. The economic constraints disappear inasmuch as they represent the objective function that we are trying to minimize in the next phase -- Comparative Analysis of Budgets Under Alternative Scheduling Plans. And for the purpose of experimenting with possible alternative schedules the use may minimize the effects of tradition and law; at least to the degree that he anticipates they are subject to change.

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* Definition: school being 'held' for state aid purposes includes 'days in session' plus certain legal holidays and days used for teachers' conventions when they occur within a school term. See Ch. 115.01 (10) of 1969 Laws of Wisconsin Relating to Public Schools excerpted on following pages.

Excerpts from the, now applicable, 1969 State Laws of Wisconsin Relating to Public Schools follows:

1969 Laws of Wisconsin Relating to Public Schools

CHAPTER 115 General Classifications and Definitions

Subchapter 1. General Classification and Definitions.

115.01 Classifications and definitions.

(1) Public Schools. Public schools are the elementary and high schools supported by public taxation.

(2) Grades. The education work of the public schools is divided into 12 grades, besides kindergarten, which are numbered from 1 to twelve beginning with the lowest. The first 8 grades are the elementary grades. The last 4 grades are the high school grades.

(6) School Year. "School year" means the time commencing with July 1 and ending with the next succeeding June 30.

(7) School Term. "School term" means the time commencing with the first school day and ending with the last school day that the schools of a school district are in operation for attendance of pupils in a school year, other than for the operation of summer classes.

(8) Session. "Session means the time during a school term that the schools of a school district are operated for the attendance of pupils.

(9) School Month. Twenty school days constitute a school month.

(10) School Day. (a) School days are days on which school is actually taught and the following days on which school is not taught:

1. Labor Day, Thanksgiving, Christmas, New Year's Day and Memorial Day, if within the scheduled school term and not within a scheduled vacation period.
2. Days on which state teachers' conventions are held.
3. Days on which school is closed by order of a health officer.

(b) Not to exceed 5 Saturdays may be counted as school days in any school year when school is taught thereon with the consent of the school board.

CHAPTER 121 School Finance

Subchapter 1. State Aid for Elementary and High Schools.

121.01 State aid withheld. (1) (a) The state superintendent may withhold state aid from any school district in which the scope and character of the work are not maintained in such manner as to meet his approval.

(b) No state aid may be paid in any year under this subchapter to a school district which fails to meet the requirements under subs. (2) and (3).

(2) Unless the state superintendent is satisfied that the failure to meet the requirements of pars. (a) and (b) was occasioned by some extraordinary cause not arising from intention or neglect on the part of the responsible officers, every school district, except a school district operating under Ch. 119, shall:

(a) Hold school for at least 180 days each year, the days to be computed in accordance with s. 1.15.01 (10).

Keeping Modification of the School Calendar in Perspective

In focusing upon modifying the school calendar so as to achieve fuller utilization of facilities (the usual impetus for considering year-round school) one should not lose sight of broader goals and objectives -- achievement of overall economy of operation and enhancement, or at least maintenance of educational quality. Myopic concentration on making improvements in a given area such as facilities utilization may result in other losses that more than offset the gains. Ideally one would like to array many alternative means (activities) for accomplishing a complex set of goals and objectives and then in one fell swoop find an optimal, or at least satisfactory, subset to be implemented. Unfortunately the tools for doing that in the educational setting are inadequate. But even if it were otherwise the need for identification, invention and description of such candidate activities would exist.

Inventing - Evaluating Alternative Scheduling Plans

The procedures and algorithm which follow are designed as a guide to a straightforward approach to the determination of the feasibility (infeasibility) of a particular scheduling plan (or equivalent set of plans). The intent is that they facilitate the creative manipulation of the variables involved in the scheduling relationship while ensuring uniform validity to all such analyses. One can concentrate on the intensification of utilization of facilities by sub-dividing the school population for attendance purposes and by increasing the number of days during the year on which attendance generates full utilization of facilities. It is obvious that these practices have greatest economic potential in situations where enrollments are currently, or are projected as, exceeding the capacity of facilities as now used. Chart 1 illustrates the effect of various groupings upon the capacity of facilities. The approach is to simply compute the amount of time, usually in terms of days, required for a particular plan and compare that with the time available in a typical (or specific) school year*. If the plan 'fits' it can be assumed that one or more specific school calendars can be created which will satisfy it.

Procedure

The user should decide what values should be assigned to each of the variables involved in the scheduling feasibility evaluation algorithm:

$$Tot = Sat + Sun + H + C + V + \frac{g}{g-1}\left(Sch - \left[\left(\frac{g-1}{g}\right)(H + C)\right]\right) - \frac{g}{g-1}\,Sp$$

The ESY Schedule Evaluation Worksheet, Part I, (Assigning Values to the Variables in the Scheduling Relationship) may be used as an aid in this process.

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* Usually a simple comparison with 365 (the number of days in a year) suffices, but a few minor checks can refine the comparison to account for the actual number of Saturdays, Sundays and weekdays in specific years. See Table 1 Saturdays, Sundays, and Weekdays in school years 1971 - 1999.

These values are then plugged into the algorithm and the necessary arithmetic performed. Worksheet Part II (Evaluating a Scheduling Plan for Feasibility) is provided to assist this process.

If the total number of days required by the plan is less than 365 (or 366 in the case of leap year) the general plan is technically scheduable.

When the algorithm may seem a bit more complex than necessary it has the strength of accounting for the effects of holidays and teachers' conventions counting as instructional days as well as being uniformly applicable to plans which envision:

a) Staggered attendance group plans
b) Plans utilizing Saturdays for instruction and
   If the user insets the integer 1 in place of the relationship $\frac{g}{g-1}$ or $\frac{g-1}{g}$ whenever a traditional schedule or traditional split shift schedule is being evaluated
c) Traditional schedules
d) Split shift schedules

Scheduling Feasibility Formula

$$Tot = \underbrace{Sat + Sun + H + C + V}_{A} + \underbrace{\frac{g}{g-1}\left(Sch - \left[\left(\frac{g-1}{g}\right)(H + C)\right]\right)}_{B} - \underbrace{\frac{1\,g}{g-1}\ Sp}_{C}$$

A: accounts for Saturdays, Sundays, holidays, teachers' conventions and vacations
B: accounts for schooldays required for g groups adjusted for holidays and teachers' convention days counted as schooldays
C: accounts for the use of Saturdays as schooldays

Definitions:

Tot = Total Days Required
Sat = Saturdays
Sun = Sundays
H = Holidays
C = teachers' convention
V = vacation
g = number of attendance groups
Sch = number of schooldays per group
Sp = Saturdays used for instruction

TABLE 1

Distribution of Weekdays, Saturdays and Sundays in School Years 1971-1999

Year	Fiscal Year Begin (July 1)	Fiscal Year End (June 30)	Total Days (365 if not indicated otherwise)	Weekdays (261 if not indicated otherwise)	Saturday (52 if not indicated otherwise)	Sunday (52 if not indicated otherwise)
1971	Th	Fri	366	262		
1972	Sat	Sat		260	53	
1973	Sun	Sun		260		53
1974	Mon	Mon				
1975	Tu	Th	366	262		
1976	Fri	Fri				
1977	Sat	Sat		260	53	
1978	Sun	Sun		260		53
1979	Mon	Tu	366	262		
1980	Wed	Wed				
1981	Th	Th				
1982	Fri	Fri				
1983	Sun	Sun	366	260	53	53
1984	Mon	Mon				
1985	Tu	Tu				
1986	Wed	Wed				
1987	Th	Fri	366	262		
1988	Sat	Sat		260	53	
1989	Sun	Sun		260		53
1990	Mon	Mon				
1991	Tu	Wed	366	262		
1992	Th	Th				
1993	Fri	Fri				
1994	Sat	Sat		260	53	
1995	Sun	Mon	366			53
1996	Tu	Tu				
1997	Wed	Wed				
1998	Th	Th				
1999	Fri	Sat	366	260	53	

EXAMPLES

$$\text{Tot} = \text{Sat} + \text{Sun} + \text{H} + \text{C} + \text{V} + \frac{g}{g-1}\left(\text{Sch} - \left[\left(\frac{g-1}{g}\right)(\text{H} + \text{C})\right]\right) - \frac{g}{g-1}\,\text{Sp}$$

Example 1. A four attendance group plan, i.e., 45-15 or quarter plan.

$$\underline{\quad} = 52 + 52 + 5 + 2 + 12 + \frac{4}{4-1}\left(186 - \left[\left(\frac{4-1}{4}\right)(5 + 2)\right]\right) - \frac{4}{4-1}\,0$$

$$\underline{\quad} = 123 + \frac{4}{3}\left(186 - \left[\left(\frac{3}{4}\right)(7)\right]\right) - 0$$

$$\underline{\quad} = 123 + \frac{4}{3}\,(180\ 3/4)$$

$$\underline{364} = 123 + 241$$

FEASIBLE, Slack = 1 day

Example 2. A three attendance group plan, i.e., 60-30 or trimester plan.

$$\underline{\quad} = 52 + 52 + 5 + 2 + \ \ ) + \frac{3}{3-1}\left(180 - \left[\left(\frac{3-1}{3}\right)(5 + 2)\right]\right) - \frac{3}{3-1}\,0$$

$$\underline{\quad} = 121 + \frac{3}{2}\left(180 - \left[\left(\frac{2}{3}\right)(7)\right]\right) - 0$$

$$\underline{\quad} = 121 + \frac{3}{2}\,(175\ 1/3)$$

$$\underline{383\ 1/2} = 121 + 262\ 1/2$$

INFEASIBLE - 18 1/2 more days required than available

Example 2a. Trimester with no vacation plus using 5 Saturdays.

$$\underline{\quad} = 52 + 52 + 5 + 2 + 0 + \frac{3}{2}\left(180 - \left[\left(\frac{2}{3}\right)(5 + 2)\right]\right) - \frac{3}{2}\,(6)$$

$$\underline{\quad} = 111 + \frac{3}{2}\,(175\ 1/3) - 9$$

$$\underline{364\ 1/2} = 111 + 262\ 1/2 - 9$$

FEASIBLE ..... no slack

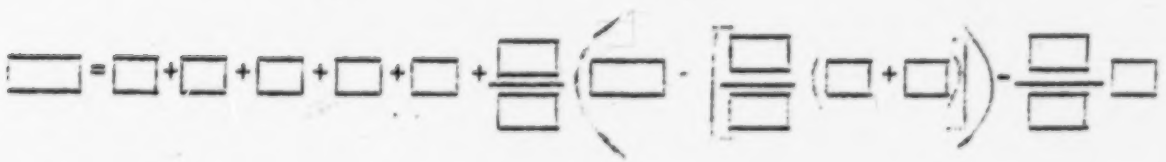
ESY SCHEDULE EVALUATION WORKSHEET

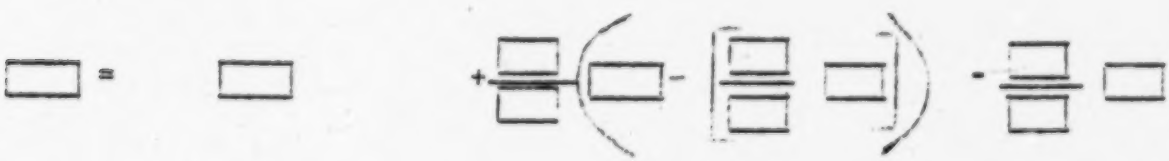
Part 1 - Assignment of Values to the Variables in the Scheduling Relationship

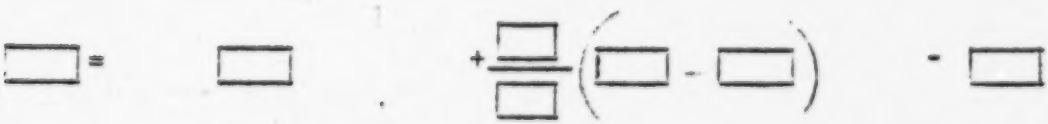
	Value Assumed	Supplied
1. Tot = Total Days required by the plan.		
2. Sat = Saturdays in the year.	52	
3. Sun = Sundays in the year.	52	
4. H = Holidays, currently state law specifies 5 holidays as school days if they fall at a time other than during a vacation period. If they fall on Saturday or Sunday a compensating weekday may be taken off and still considered a school day.		
5. C = Teachers' convention days, currently as with holidays the state law specified two days.	2	
6. V = Vacation (school not being 'held' for any attendance group	0	
7. g = number of groups into which the student enrollment shall be divided for staggered attendance.	4	
8. Sch = Schooldays, currently state law specifies 180 including as many as 5 holidays and 2 teachers' convention days if they fall in other than periods of vacation.	180	
9. Sp = Saturdays to be used as school days for an attendance group. Currently the state law permits a school to schedule as many as 5.	0	

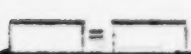
Part 2 - Evaluating a Scheduling Plan for Feasibility

$$\underbrace{Tot = Sat + Sun + H + C + V}_{A} + \underbrace{\frac{g}{g-1}\left(Sch - \left[\left(\frac{g-1}{g}\right)(H + C)\right]\right)}_{B} - \underbrace{\frac{g}{g-1}\,Sp}_{C}$$





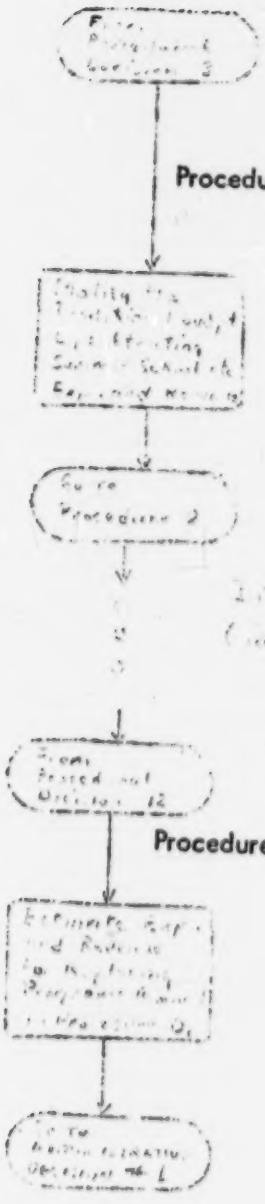




PART VI: "NETTING OUT" THE TRADITIONAL PLAN
Procedure D

"Netting out" the traditional budget , i.e., removing the expenditures and revenues associated with summer school and other augmenting programs.

Disruption of some school programs which augment the basic traditional school year will occur if an extended school year program is implemented. The user may find it desirable to account for the loss and possible replacement of these programs. If so, the budget as transcribed for analysis in Procedure C_3 should be modified appropriately. The user is left to his own devices for this procedure, but a set of 'netted out' budget forms will be needed throughout the remainder of the analysis.



Procedure D

Procedure G

Procedures E and G----Accounting for the Effects of Summer School and other Augmenting Programs.

D See Subsection D.

G See Subsection G.

EXTENDED SCHOOL YEAR - BUDGET ANALYSIS

WORKSHEET D1 --- Subtracting the costs of summer school and other programs which augment the traditional calendar.

Program Identification			(Minus)	
Acct. No.	Description	Total Budgeted (whole year)	Summer School Component	Net Amount Budgeted for the Traditional Academic Year

PART VII: ANALYSIS OF THE IMPACT OF THE ESY PLAN UPON EXPENDITURES

Procedures E_1, E_2 and E_3

A collection of routines for analysis of the effect of the ESY plan upon the various budgetary expenditure categories.

FRAMEWORK

This analysis is intended as having the following qualities:

Modularity -- The procedures permit a division of tasks amongst several members of a team or to permit partial analysis of an ESY plan.

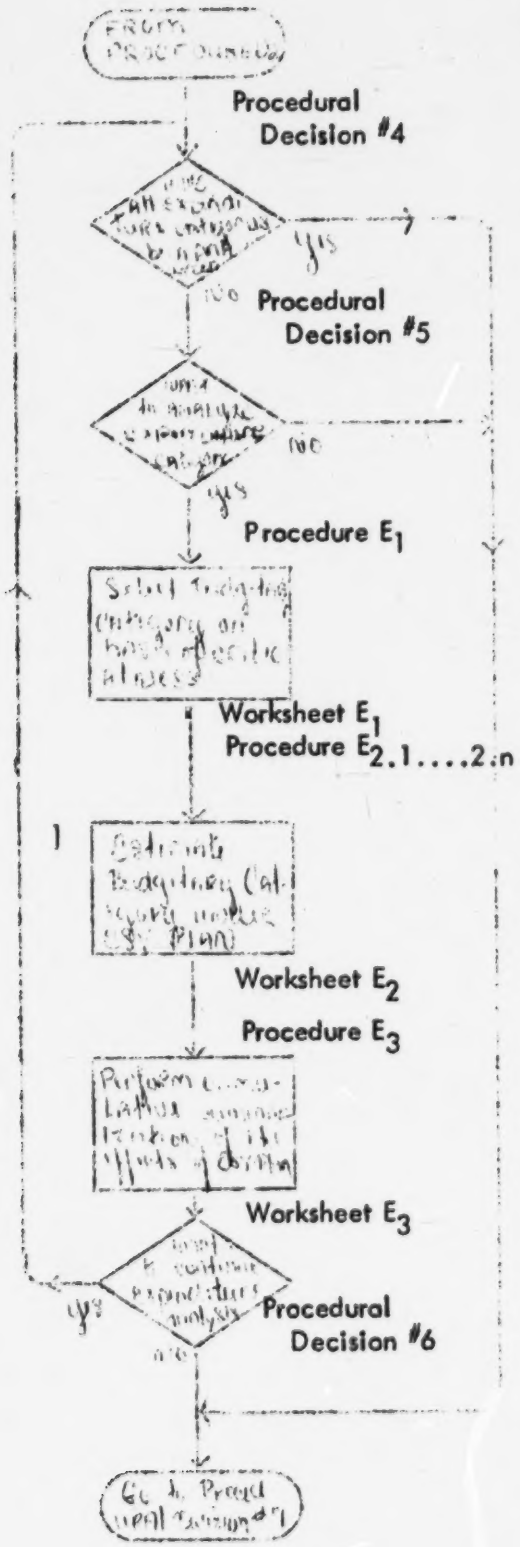
The modules are essentially the budgetary categories as they are commonly identified in the line budgets*

- Instruction
- Debt Retirement and Capital Outlay
- Administration or General Control
- Fixed Charges
- Plant Operation
- Plant Maintenance
- Pupil Transportation
- Food Services or more generally Commercial Services
- Health Services
- Community Services

Flexibility with respect to detail level -- The procedures are designed so as to permit analysis to be conducted on either highly aggregated or more detailed budgetary data. This flexibility is gained through use of a scalar technique. Each component of the traditional budget analyzed separately is represented as a percentage of the traditional budget, and its ESY counterpart is computed as a percentage of the traditional budget. The result is that the sum of all the components of the traditional budget equals one hundred percent. The sum of all the components of the ESY budget equals some percentage of the traditional budget. Consequently different components may be analyzed at different levels of detail while preserving the integrity of the 'whole' budget. The concept is presented graphically in Appendix E, Item 2.

*See Appendix E, Item 1. for a critical discussion of the usefulness these techniques in the case of program budgeting.

Sensitivity to cost effectiveness in making the feasibility study. Procedures are suggested for ordering budgetary categories or components so as to permit analysis of the most critical first and the least critical last. Thus evidence of an unfavorable budgetary outcome for an ESY plan can be obtained before a great deal of effort has been expended. See Appendix E, Item 3.



Procedure E----Analysis of Budgetary Expenditure Categories

PD 4 When all expenditure categories have been analyzed to the degree desired the user moves on to Procedural Decision #7, revenue analysis.

PD 5 The user may decide to omit analysis of certain expense categories which are felt to be insensitive to the ESY plan.

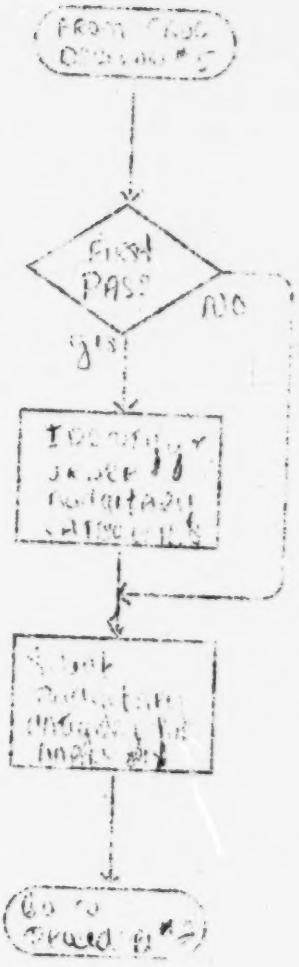
E_1 See Subsection E_1. In this procedure an attempt is made to order the expenditure categories in decreasing order of importance for analysis of an ESY plan.

$E_{2.n}$ See Subsections as defined. Detailed analysis of budgetary expenditure categories.

E_3 See Subsections as defined. Cumulative summarization of the impact of the ESY plan upon expenditures.

PD 6 At any point the analysis may be terminated or modified if evaluation of the ESY plan's performance indicates it is failing to meet the goals and objectives established. Detailed analysis may also be halted if the impact upon remaining categories of expenditures is judged of little significance.

Procedure E1----Identification, Ordering and Selection of Budgetary Components for Analysis.



Procedure E1.1

Procedure E1.1----Sequencing Budgetary Categories

In the first pass through this set of procedures the user may select the sequence in which budgetary categories are to be analyzed by:

a. calculating each as a percentage of higher level budgetary aggregates and of the total budget to produce a preliminary 'magnitude' sequence.

b. modify the magnitude sequence by application of sensitivity multipliers. These may be estimated by the user according to the peculiarities of the local situation, a standard set applied, or no correction to the magnitude list made. See appendix E, Item 3 for suggestions and sample worksheets.

Procedure E1.2----Regardless of the procedure used to order budgetary category for analysis they are selected for analysis at the proper time here.

Table E.1----Illustration of the flexible modular structure of budgetary analysis.

Budgetary Categories

Items	Instruction	Capital Outlay	Community Service	Total
item 1	$\lambda B^{trad}_{item\ 1} = \$^{esy}_{item\ 1}$	$\frac{\$^{esy}}{\$trad} = \lambda$ item 1	$B^{trad}_{item\ 1} = \$^{esy}_{item\ 1}$	*****
item 2	$\lambda B^{trad}_{item2} = \$^{esy}$	$\frac{\$^{esy}}{\$^{trad}} = \lambda$ item 2	$\frac{\$^{esy}}{\$^{trad}} = \lambda$ item 2	*****
item n	$\lambda B^{trad}_{item\ n} = \$^{esy}$	$\frac{\$^{esy}}{\$^{trad}} = \lambda$ item n		*****

* Note that there is no appropriate totaling across line items. From one category to another, they are as different as books, pie and coaching.

	$\$^{esy}_{instr} + \$^{esy}_{c.o.} + \ldots\ldots\ldots\ldots + \$^{esy}_{c,s.}$		$\$^{esy}_{total\ budget} = \lambda B^{trad}_{total}$	
	Instruction	Capital Outlay	Community Service	
	$\frac{\$^{esy}}{\$^{trad}} = instr$	$\frac{\$^{esy}}{\$^{trad}} = \lambda$ c.o.	$\frac{\$^{esy}}{\$^{trad}} = \lambda$ c.s	$\frac{\$^{esy}}{\$^{trad}} = \lambda$ budget total
	$\lambda B^{trad}_{instr} = \$^{esy}_{Instr}$	$\lambda B^{trad}_{c.o.} = \$^{esy}_{c.o.}$	$\lambda B^{trad}_{c.s.} = \$^{esy}_{c.s.}$	$= \$^{esy}_{total\ budget} = \lambda B^{trad}_{total}$

The purpose of the table above is to illustrate that given the two relationships:

$$\frac{\$^{esy}_{category}}{\$^{trad}_{category}} = category \quad \text{and} \quad B^{trad}_{category} = \$^{esy}_{category}$$

one may vary the analytic technique from direct estimation of line items in some budgetary categories to more esoteric 'formula' approaches in others and yet with ease integrate the results to depict the ESY budget in either percentage or total dollars or both. The intent is to lay the groundwork for future evolution of various modules either by the user or by SWREC staff.

Where: (Greek Lambda) is the scalar representing the ratios (comparative magnitudes) of of various budgetary components.
trad. = traditional school year plan
B = Budget in dollars
ESY = extended school year plan
C = budgetary category
T = total

While the various budgetary component analysis module use different means of generating an illustration may be useful. Suppose that in budgeting capital outlay one estimates new typewriter requirements as follows:

$$\frac{\text{qty req'd}^{esy}}{\text{qty req'd}^{trad}} \cdot \frac{\text{est unit cost}^{esy}}{\text{unit cost}^{trad}} = \frac{\text{line item cost}^{esy}}{\text{line item cost}^{trad}} = \text{item, say typewriters}$$

$$16/20 \cdot 1/1 = 4/5 = 0.80$$

This 0.80 tells us that we are estimating typewriters under the ESY plan as costing only 80% as much as under the traditional plan. The dollars worth of typewriters under the ESY plan are arrived at by multiplying 0.8 x the total cost of typewriters under the traditional plan, or: (.8) x (20 x 300) = .8 (6000) = $4800. Similarly each of the ESY analogs of line items in the capital outlay budget is found.

The scalar for the whole capital outlay budget is equal to the sum of the ESY dollar amount divided by the sum of the traditional budget dollar amounts.
so that for example if:

$$\frac{B^{esy}_{item\ 1} + B^{esy}_{item\ 2} + \cdots\cdots + B^{esy}_{item\ n}}{B^{trad}_{item\ 1} + B^{trad}_{item\ 2} + \cdots\cdots + B^{trad}_{item\ n}} = \frac{\sum B^{esy}_{items\ 1\ n}}{\sum B^{trad}_{items\ 1\ n}} = \text{category n (say, capital outlay)}$$

$$\text{detail omitted} \ldots\ldots\ldots = \frac{\$60,000}{\$\ 40,000} = 1.5$$

or if category n is otherwise estimated to be 1.5:

$B^{esy}_{category\ n}$ can be found by $\lambda_{category\ n}\ B^{trad}_{category\ n} = B^{esy}_{category\ n}$

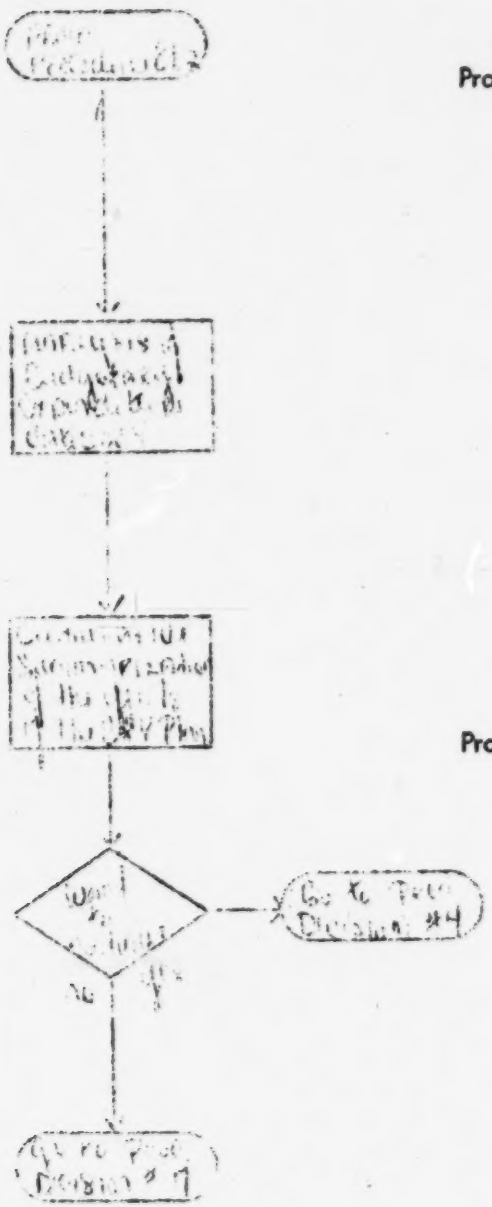
Thus the Capital Outlay Budget for the ESY Plan is: 1.5 ($40,000) = $60,000.

Worksheet E1.1----Sequencing Local Budgetary Categories for Analysis

A	B	C	D	E
Budgetary Category	% of Total Espenditure	Sensitivity Index*	Product B x C	Sequence for Analysis

* It is suggested that the user insert a multiplier similar to that in the example in Appendix E, Item 3 which reflects local judgement about sensitivity.

Procedure E2----Analysis of Budgetary Expenditures Categories and
E3----Accumulation of the Effects of the ESY Plan



Procedure(s) E2.1 Instruction

2.2 Debt Retirement & Capital Outlay

2.3 Transportation

2.4 Fixed Charges

2.5 Plant Operation

2.6 Plant Maintenance

2.7 Food Service

2.8 Health Service

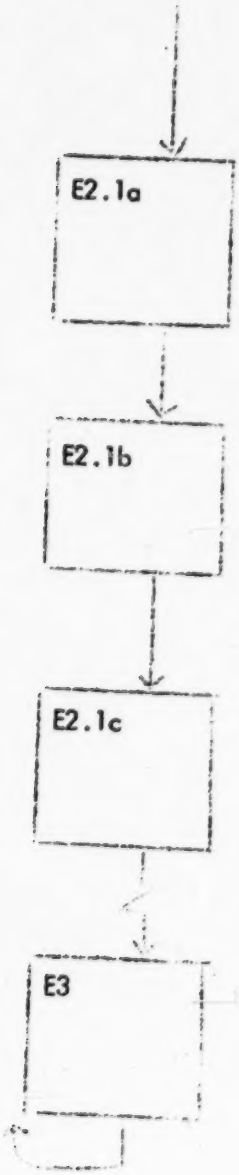
2.9 Community Service

Procedure E3----Cumulative Summarization of the Budgetary Effects of the ESY Plan

Procedure	Expenditure Category	A % Total Current Expenditure	B % Total Expenditure	C Suggested Index of Sensitivity	D Product B x C	E Suggested Sequence for Analysis
E2.1	Instruction	66.7	54.3	1.05	57.0	1
E2.2	Debt Retirement					
a	Capital Outlay 15.2	****	17.6	1.50	26.4	2
b	Interest on Debt 2.4	****				
E2.3	Fixed Charge	8.9	7.3	1.20	8.8	4
E2.4	Plant Operation	8.4	6.8	1.20	7.2	5
E2.5	Transportation*	5.9	4.9	2.00	9.8	3
E2.6	Administration	4.0	3.3	1.05	3.5	6
E2.7	Plant Maintenance	3.1	2.5	1.20	3.0	7
E2.8	Other School Service:					
a.	Food Service					
b.	Health Service					
f.	Community Service	2.8	2.2	1.00	2.2	8
c.	Interscholastic athletics					
d.	Other Student activities					
e.	Sales					
	Total not equal 100 because of rounding errors				***	**

* Transportation broken out of 'Other School Service' on basis of certain S.E. Wisconsin School Budget for 1970-71.

Procedure E2.1----Estimation of Instructional Expendutures under the ESY Plan.



Estimation of teacher station and teacher requirement under the ESY Plan.

Estimation of the Salary and Wage portion of the Instructional Budget under the ESY Plan.

Estimation of the non-Salary and Wage portion of the Instructional Budget under the ESY Plan.

Cumulative Summarization of the effects of the ESY Plan.

Procedure E2.1a----Estimation of teacher station and teacher requirements under the ESY Plan.

Determination of teacher station and teacher requirement for an ESY plan being implemented would be much more specific then is contemplated here. In this feasibility study stage the objective is achievement of reasonably close approximations without the expenditure of great effort. The user is urged to vary the application of these procedures and materials and to make parallel estimates using different methods as the opportunity arises. Again, the objective is estimation of teacher stations and teacher requirements.

These estimates need to be completed for the entire district (or at least for the portion of the district for which the ESY plan is contemplated). It will likely be desirable to consider some instructional levels and attendance centers separatly at first, then aggregate the separate component. For example, in a K-12 district one will probably handle elementary, intermediate, middle school, junior high, senior high or whatever instructional management levels exist separately. And, depending upon the assumptions made about redistribution of students to different attendance centers all those at the same level may either be handled simultaneously or separately. A scalar technique may be used to aggregate for the whole district the effects upon components estimated separately.

A first step in estimating teacher station and teacher requirements is to array (set forth) the essential data, constraints, and other information. Tabular forms, worksheet E2.1a(3.1) and E2.1a(3.2) or other wise) the user estimates the teacher requirement of the ESY Plan. It is not envisioned that this is a simple one shot process--rather a dynamic, iterative one. The user will soubtless find it necessary to modify the constraint and assumptions defining the ESY plan to achieve satisfactory results. Charts E2.1a3 chart 1, 2, and 3 and a worksheet Ex.1a3.3 (with instructions) are provided. Perhaps the user will prefer to use some other approach and to intersect the ESY Analysis Aid again in E21b or elsewhere.

Worksheet E2.1a(3.1)----Data for estimating teacher station and teacher reg'ts for ESY Plan.

School Code _____ School Year 19__

School Attendance Center, or Adm. Unit	K	1	2	3	4	5	6	7	8	9	10	11	12	Total

Worksheet E2.1a(3,2)----Data for use in estimating teacher station and teacher requirements under the ESY Plan.

All data is for the current traditional plan

Total District (Portion for which ESY plan is being evaluated)

Student enrollment = _____ FTE

Total teachers = _____ FTE classroom teachers

Separate schools or adm. unit = _____ for school year 19__-__

Line Code	School, attendance center or adm. unit	Grades or courses	Student enrollment	Number of teachers	Constraints upon reorganization of ESY Plan

* Line code should be the same for that item on all worksheets.

Worksheet E2.1a(3.2) cont. page _____ Data for teachers station estimate.

School District _____ For school year 19__ - ___

Line Code	School, attendance center or adm. unit	Grades or Courses	Student Enrollment	Number of Teachers	Constraints upon reorganization of ESY Plan

E2.1a3.3----Procedures to accompany worksheet for estimating class sections, teachers, and the salary and wage budget for an ESY Plan.

STEPS

1. Enter on the worksheet E2.1a3.3

   a. identifying data--use any scheme that fits the situation.
   b. data concerning the current s ituation--cols. ST, TO.

2. Calculate and enter

   a. average number of students/grade or course, $Sg = \frac{ST}{TO}$

   b. current teacher : pupil ratio, $Ro = \frac{Sg}{To}$

   c. weighting scalar; $Wt = \frac{Sg}{\text{(total student population}}$

3. Estimate and enter

   a. number of sections required; $Sec = \frac{Sg}{Ro}$ or Ra, or by use of charts or tables E2.1a3, chart 1 etc.

   b. number of teachers required; $Tr = \frac{G-1}{G}$ (Sec where G = number of attendance.

   c. Pupil : teacher ratio resulting if the same number of teachers (same number of total teacher days) are used in implementing the ESY Plan;

$$Rc = \frac{(tr)\ \frac{(g)}{(g-1)}\ (Ro)}{To}$$

   d. projected salary and wage budget; $Bp = \frac{Rc}{Ro}$

   e. projected salary and wage budget (weighted) $Bwp = W\ (Bp)$

Worksheet E2.1a(3.3)----Estimating Teaching Stations, Teacher Requirements, and Projected Instructional Salary and Wage Budgets for Teaching under the ESY Plan.

School District: _____ Date _____ Prepared by: _____ For ESY Plan: _____

Identification			Current Plan				Extended School Year Plan			
			Students		Current		At Current Pupil:Teacher ratio			
Line Code	School, Attendance Center Grade Level or Course	Adm. Unit	Grade, Instructional Grouping or Course	Total	Ave. No. per Grade or Course	No. of teachers	Pupil: teacher ratio	No. of Sections Required	No. of Teachers Required	Pupil:Teacher ratio required for current No. of Teachers	Projected S&W budget @ Current Pupil:teacher ratio
***	**********		********	St	Sg	To	Ro	Sec	Tr	Rc	Bp
			GRADE OR SECTIONS								

Relationships: $S_G = \frac{S_T}{\#\text{ grades or groups}}$ $R_o = \frac{S_t}{To}$ $T_r = \frac{G-1}{G}$ (Sec); where G = # attendance groups req'd by ESY plan $Rc = \frac{(Tr)(G-1)(Ro)}{To}$

$B_p = \frac{Rc}{Ro}$ $Sec = \frac{S_G}{Rc \text{ or } Ro}$ or by use of charts or tables E2.1a3 chart 1, etc with Ro or Ra

Procedure E2.1b----Estimation of the Salary and Wage Portion of the Instructional Budget under the ESY Plan.

The objective in this section is to produce an estimate of the salary and wage portion of the budget under the ESY plan. This is accomplished by refining the estimate produced in procedure E2.1a to take into account changes caused by reorganization for ESY as follows:

1. Changes in the number of supervisory personnel (principal, department chairmen, etc)

2. Changes in the basic salary schedule level.

3. Changes in the staff salary level profile.

4. Changes in the length of the teacher's basic school year, i.e. student school year plus overhead days.

E2.1b(1)----Refining teacher stations and teacher requirement estimates.

Adjustment can be ignored to whatever extent procedure E2.1a took into account the teaching activities of supervisory personnel. Otherwise, the adjustment should account for positions eliminated or added by the closing or opening of attendance center, departments, etc. Such adjustments may be made once, school wide, or upon the individual administrative units, attendance centers etc. for which the estimates in E2.1a were calculated. In either event the ultimate objective is to affect the total projected salary and wage budget for instruction under the ESY plan. This is accomplished by making additions to or subtractions from Tr (teacher required) and recomputing Rc, Bp, Bwp and Bwp (cumulative). In making the additions it should be kept in mind that principals and supervisors are usually employed for a greater period on the traditional schedule than other teachers. Thus, the deletion of a supervisory position might have the impact as illustrated in part 1, lines 1, 2, and 3 of the example below:

E2.1b2----Mocification of Instructional Salary and Wage Estimates for the ESY Plan to account for changes in the salary schedule.

No modification of the estimate is required if it is assumed that teachers will be paid proportionately more (or less) for increases (decreases) in the duration of their contracts.

There are forces at work (some are noted below) which would tend to raise the salary schedule level, forces to hold it steady, and forces to lower it. The experience and judgement of the user are relied upon for an estimate of their net interacting effect.

Force or Argument	Direction	Evidence (reference)
1. Status quo	(0)	Valley View and other current ESY experiments
2. Effects upon teachers supply: demand relationship	(↓)	economic analysis (price elasticity)
3. Satisfaction withfulles employment	(↓)	Scott Bauman, George Thomas
4. Greater professionalism	(↑)	speculation
5. Organized labor	(↑)	speculation

If modification is desired then a scalar (percentage multiplier) reflecting the degree of modification desired should be applied to the TOTAL PROJECTED SALARY AND WAGE BUDGET FOR INSTRUCTION UNDER THE ESY PLAN found on line 3 of worksheet E2.1b(1.2). An example using an estimate of a 2% lower salary schedule is shown in the copy of the worksheet attached to procedure E2.1b1.

E2.1b3----Modification of Instructional Salary and Wage Estimates for changes in the staff salary level profile.

Implementation of an extended school year plan will likely have an effect upon the staff salary level profile (the number of personnel at various levels on the salary schedule). At first this effect may be to bias the profile towards greater experience and training. This, because the fewer jobs may go to those in the best position to retain them. In the longer run a return to the current profile might be expected. The user is urged to consider this problem. A scalar with a value of one (1) indicates no change, a good default choice. See the sample worksheet, E2.1b(1.2) lines 5, 6 and 7 for an example of this modification.

E2.1b4----Modification of Instructional Salary and Wage Budget Estimates for the ESY Plan to account for the effect of a change in the length of school year per pupil.

It may be noted that in Wisconsin the state law requires at least 175 days of school per student. But all schools contract with teachers for more days than they schedule students for instruction. And as may be seen in the following table only one school schedules students for minimum 175 days.

1971-72 Wisconsin Schoolyears

	Min	Mode	Max
Teaching Days	175 (Bayfield)	180	184
Total Days	183	190	196
Other Days	4	10	15

Likely as not implementation of an extended school year program will involve a change in the length of the school year for a typical student....or more exactly, (for these budget estimation operations) the teacher.

This effect should be accounted for. The scalar for modification of the instructional salary and wage budget to account for a change in the length of the schoolyear may be computed as follows:

$$Y = \frac{\text{Teaching days}^{esy} + \text{non-Teaching days}^{esy}}{\frac{G}{G-1}\left(\text{teaching days}^{trad} + \text{non-teaching days}^{trad}\right)}$$

Appendix E, Item 3----Applying a 'sensitivity index' to select prime target for analysis.

Interest in ESY seems to derive from a desire to save money by intensifying the utilization of facilities. However efficient analysis of an ESY plan will not necessarily begin with debt service or capital outlay. It should proceed from those budgetary areas in which the greatest total effect is likely to lesser ones. Almost certainly the most critical is the instructional budget, especially the salary and wage portion of it.

On the following page is a list of budgetary expenditure categories in order of decreasing magnitude. These figures are based upon Wisconsin statewide averages for the school year 1967-68.

Procedure E2.1c----Estimating the non-salary and wage portion of the instructional budget.

While these expendutures ordinarily comprise less then ten percent of the total instructional budget they still, by themselves, total more than any of the other categories except plant operation or the capital budget. Typical items are; data processing and other contracted services, instructional supplies and materials, textbooks and library materials, travel, inservece education, laundry, assembly and graduation expenses.

The approach described here for estimating non-salary and wage expenditures for instruction under an esy plan is sumilar to that used for several other budgetary categories--plant operations, maintenance, fixed charges, and commericial service. That is, the calculations are based upon estimates of the effects of changes in the number of cohorts (attendance groups), scheduling efficiency, pupil : teacher ratio, and the proportion of the year required by the plan. Some information upon which to base these estimates will be provided. But since esy plans, local situations and budgeting practices vary the user is charged with the responsibility for supplying appropriate coefficients.

EXAMPLE

Worksheet E2.1c(1)----Estimating the non-salary and wage portion of the instructional budget.

Item Description	Budget Code	Amount in traditional budget (a)	Relationship * (b)	Net 1+b= (c)	Estimated ESY budget amount (d)
			where G=4		
Data Processing	125	24,000	$\frac{G}{G-1} = 1/2 \times 4/3$ $\frac{}{2/1} = 2/3 = .67$	1.67	40.080
rationale: generally data processing charges for scheduling more then one cohort will exceed that for just one; but, less than proportionately.					
Contract Services					
item 1		2,500			
item 2		4,000			
.		.	$\frac{G-1}{G} = 3/4 \times 1/3$	1.25	20,000
.		.			
.		.	$\frac{G-1}{G} = .25$ or		
item n		600			
Total	1129	16,000	$1/6 = .25$		
rationale: similar to above--but with less severe increase in consumption.					
Library Materials	1140	4,000	$\frac{1}{-G} = -1/4 \times 1/2$ $\frac{}{2/1}$ $= -0.125$	.885	3,440
rationale: same savings will result from having smaller numbers of students using library materials at any one time; though not fully proportional.					
Total	*****		**********		

* This coefficient should be expressed in terms of percent change relative to the amount required in the traditional school budget. i.e. +0.1 or -0.5 Frequently, but not invariably, the change can be accounted for by one coefficient. If more than one is used try to avoid duplication in summing them into (b).

Worksheet E2.1c(1)----Estimating the non-salary and wage portion of the instructional budget.

Item Description	Budget Code	Amount in traditional budget (a)	Relationship * (b)	Net 1+b= (c)	Estimated ESY budget amount (d)
Total	*****		**********		

* This coefficient should be expressed in terms of percent change relative to the amount required in the traditional school budget. i.e. +0.1 or -0.5 Frequently, but not invariably, the change can be accounted for by one coefficient. If more than one is used try to avoid duplication in summing them into (b).

Worksheet E3.1----Cumulative Summarization of the Expenditure Effect of the ESY Plan

Budgetary Category	Amount Budgeted Traditional Plan	Estimated ESY Expenditure	Net Change	Cumulative Change in Total Budget		100+% Change
				Dollars	Percent	
Total						

It is suggested that initially estimated ESY expenditure be set equal to budgeted amounts in traditional plan. These ESY amounts are then changed as analysis to estimate each is performed. Thus at any point in the analysis an estimated total ESY budget will exist. It will improve in accuracy as more expenditure categories are analyzed.

Appendix E, Item 1 WITH RESPECT TO ANALYTIC PROCEDURES USEFULNESS WHERE PROGRAM BUDGETING IS THE MODE.

Question: Are the same analytic, transformation and projection techniques applicable for traditional vs. esy school programs regardless of whether line or program budgeting is used?

It is thought that the answer is yes. But yes only because of the vagaries introduced by step functions encountered in scheduling educational program activities. Were step functions not present, program budgeting might indeed admit rather straightforward optimization of the school program. Unfortunately it becomes necessary to first schedule activities against resources (or else make some rather bold assumptions) for schools doing program budgeting as well as for those doing line budgeting. This, in order to determine the actual (or approximate) efficiency with which each resource will be used.

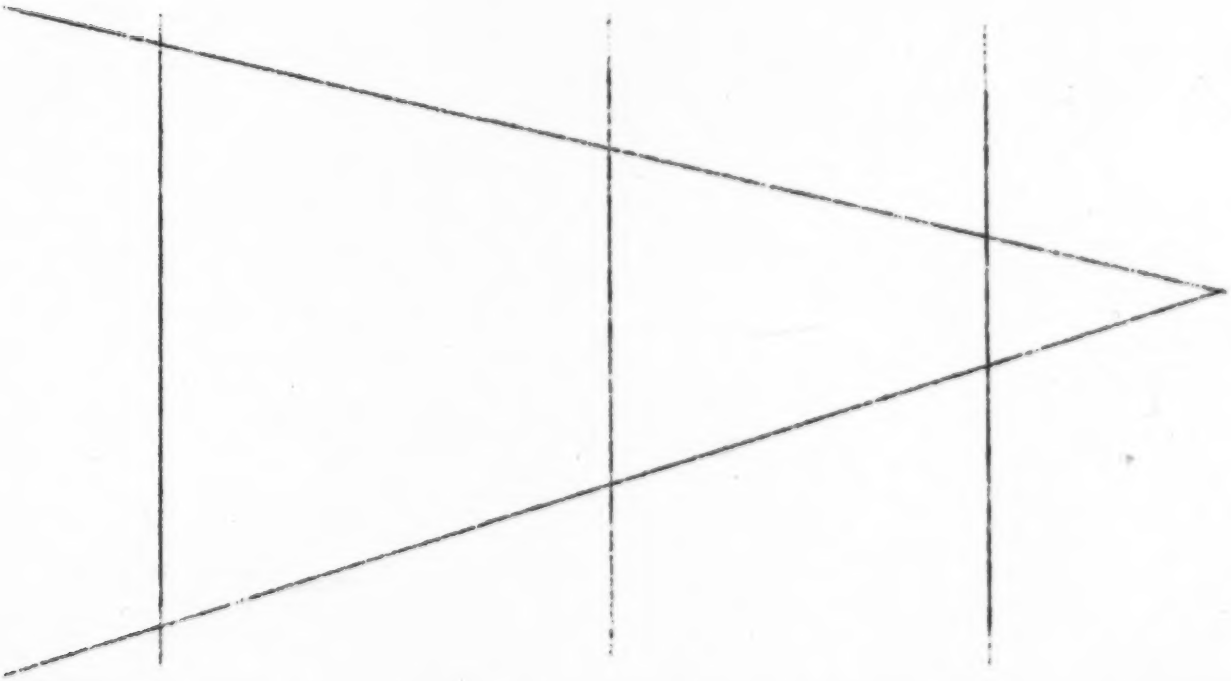
It is probably fitting to remember that in each case at least at the highest level of aggregation it is a program being evaluated. Program budgeting merely attempts to relate outcome objectives with program activities for sub-parts of the whole. Thus, program budgeting at a more highly aggregated level i.e. building, department or school district.

Appendix E, Item 2 Illustration of the use of scalars to achieve flexibility with respect to detail level in estimating ESY budgets.

Highly Detailed Level (line items)

Intermediate Level (budgetary categories)

Most Highly Aggregated Level (total budget)



PART VII----EXPENDITURES ANALYSIS

Section E2.2----CAPITAL BUDGETING

Including sub-sections: E2.2a Capital Outlay
E2.2b Debt Retirement
E2.2c Longer Term Estimates

Capital budgeting refers to investment decision making procedures. It encompasses selection of alternative investments their timing and the arrangement of financial means for their completion.

For schools these investments include site acquisition and improvement, construction and equipping of new vuildings and additions, and improvement of existing buildings. School budget typically divide the current year's expenditures related to investments into the ub-categories--capital outlay and deb service. Under capital outlay are included those expenditures which are not capitalized i.e. expenditures on a pay-as-you-go basis. Under debt service are principal and interest payments against bonded indebtedness as well as certain other debt service expenses.*

An ideal goal from the economic viewpoint is to budget capital expenditures so that, all else equal, the rate of return on the investment is maximized. But in education, quantitative measurement of the out put of the system in dollars is elusive. So to, is it difficult to pro-rate the educational product amongst various inputs.'

There are, however, two other means of looking at capital investment; (1) in terms of annual amount budgeted and (2) in terms of the present worth of alternative investment plans. Both of these are feasible in the school management setting.

Calculation of the annual amount budgeted has the most immediate impact and appeal. This is true because in spite of all else annual budgets for specific amounts must be prepared and administered.

But calculation of the present worth of various plans for investment in school plants and equipment is a worthy activity for prudent school management. Again, assuming everything else equal and all the appropriate adjustments for interest, depreciation, inflation, and the like: the plan with the lowest present worth is superior in minimizing the long run real costs of capital investment.

Perhaps this can be illustrated convincingly. Consider a single investment of $100,000 in the current year. This has a present worth of $95,240. But with interest at five per-
and no inflation that same investment postponed five years has appresent worth of $78,350.

(

* See the Uniform Financial Accounting Handbook for Wisconsin Schools, 1972 edition, Wisconsin C. Kahl State September

An but, it is argued, inflation at five percent makes it necessary to pay $128,000 for the same thing at the end of five years--and the present worth of $128 000 spent five years hence is approximately $100,000. The fallacy of this line of reasoning is that it ignores depreciation and obsolesence which take place during those five suppo edly unnecessary years during which the item is on hand . In this example then, any investment five years hence of less than $128,000 has a present value of less than $100,00 today and will thus be a superior economic decision.

That there may be non-economic justification for a particular investment decision is understood. However, it is good to be in the position of knowing when such is the case.

Analysis of the capital outlay and debt service portions of the budget is closely associated in these procedures because the investment decisions made to implement a year-round school calandar or for that matter to operate a traditional calandar may direct expenditures to either category. For example, installation of air-conditioning equipment may be handled either as a capital outlay or a long term debt depending upon whether or not bonds are sold to cover the expenditure.

It is intended that these procedures facilitate a parallel comparison of total capital budget (capital outlay + debt service) in terms of both annual budget and present worth projections. Of course, the capability to accomplish this and the quality of the outcome is dependent upon the existance and validity of alternatives esy and traditional pland projecting some distance (ten or more years) into the future.

Section E2.2a----Capital Outlay Procedure for Estimation

Capital outlay includes improvements to school grounds and sites, improvements to buildings, their climate control systems and the cost of all new furniture and equipment that is not a replacement of something already owned by the school.

In the short run, there is insufficient functional relationship between capital outlay required for continuance of a traditional school calandar and that required by a year-round school schedule to permit a 'formula' approach. The traditional plan requires a larger school plant. An esy plan will probably require a more sophisticated plant, at least in terms of climate control. An esy plan will probably also accelerate normal wear-and-tear. It is therefore thought advisible to estimate capital outlay for each different plan separately. The accompanying worksheets and table are provided for this purpose.

However, it may be possible to predict long-run capital outlay for an esy plan as some function of the traditional capital outlay budget. One might expect the long run capital outlay budget to be somewhere between the traditional capital outlay budget and that fraction of it represented by the number of students enrolled in an average sized attendance cohort.

See section E2.2c.

Worksheet E2.2a1----Estimating capital outlay expenditure under an esy plan over the short-run (up to five years)

Budget Year:

Budget Code	Item Description	Estimated Expense Traditional Plan	- ESY Plan	= Net
Total				

* This worksheet and procedure should be used for the first three to five years under an esy plan. Worksheets E2.2c1 and 2 may be used for subsequent years.

Worksheet E2.2a2---- Computing the Present Worth of Capital Outlay for Traditional vs. ESY Plans.

Budget Year a	Estimated Capital Outlay Budget			Present Worth Calculation	
	Traditional Plan b	ESY Plan c	(b-c) Difference d	(d x e) Factor e	Amount f
1972					
1973					
1974					
1975					
1976					
1977					
1978					
1979					
1980					
1981					
1982					
Total				********	

The amount calculated as present worth for each Budget Year is the value of that investment decision in the year that the feasibility study is being made. If, perchance, traditional plans and the esy plan call for exactly the same capital outlay, neither will have an advantage in current budgeted amount or percent worth. Presumably, however, the lower long term capital outlay for an esy plan will give it an advantage. The short run may be the opposite.

* See Table E2.2a1 on the following page.

Section E2.2b----Debt Service

Debt Service expenditures are for payment of principal, interest and service charges on outstanding school bonds.

Transition from a traditional to a year-round school program will have no effect upon debts already in existence. Debt service will be increased by year-round operations only to the extent that, in preparation for year-round operation, new debts are incurred.

So long as year-round operations continue the relatively small physical plant that they require can be provided with less construction of new or replacement buildings. But higher quality climate control required by new year-round facilities and some less in economy of scale will likely raise the unit costs for new space.

Nevertheless the total new investments in physical plant should be somewhat lower than would be required for continuation of a traditional school program. The actual amount will vary from district to district depending upon the adequacy of facilities at the time year-round operations are commenced, and upon future enrollments. A district with a static school population and relatively new facilities might need no new construction for the remainder of this century. Another with a rapidly growing population and crowded, well-worn buildings might be confronted with significant new construction before 1975---even with year-round operation.

It is the expressed intent in this analysis to avoid dealing with curriculum, teaching methods and the like. However, it might be well to point out that the authors are convinced that impending changes in those areas will have important implications in terms of the facilities desired for educational programs later in this decade. Year-round operations might aid in avoiding construction of 'already obsolete' new buildings by postponing additions for a few years

Procedure E2.2b----Estimation of the Debt Service Portion of the School Budget for Traditional and ESY Operations.

Section E2.2c----Estimating the Capital Outlay Budget under an ESY Plan over the longer term (beyond 3-5 years.)

The general mode for estimating the capital outlay budget over the longer term is to work out estimated functional relationship which, when applied to the projected capital outlay under a traditional budget for the same period, will produce a reliable estimate of capital outlay under the esy plan.

A likely beginning point for the identification of an appropriate functional relationship is with the logical expectation that the capital outlay budget will be somewhere between the traditional one and that fraction of represented by the number of students enrolled in an esy attendance cohort.

Perhaps the relationship will look something like this:

$$B^{esy}_{\text{capital outlay}} = 1 - A\,\frac{1}{G}\; B^{trad}_{\text{capital outlay}}$$

Where: G = number of cohorts in the esy plan
A = a coefficient representing the amount of the decrease in average daily enrollment which will be realized as savings i.e. A = .25 implies dollar savings will be 25% of the reduction in average enrollment.

Example: $A = 0.25$, $G = 4$, $B^{trad}_{\text{capital outlay}} = \$40{,}000$

$$B^{esy}_{\text{capital outlay}} = 1 - A\,\frac{1}{G}\; B^{trad}_{\text{capital outlay}}$$

$$= 1 - (.25)\ 1/4 \qquad 40{,}000$$

$$= 1 - 1/16 \qquad 40{,}000$$

$$= 15/16\ (40{,}000)$$

$$= 37{,}480$$

Table E2-2c1----Present Worth Factors

Period	Interest Rate (%)									
n	1	2	3	4	5	6	8	10	12	15
1	.990	.980	.971	.962	.952	.943	.926	.909	.893	.897
2	.980	.961	.943	.925	.907	.890	.857	.826	.797	.756
3	.971	.942	.915	.889	.861	.840	.794	.751	.719	.658
4	.901	.924	.889	.855	.823	.792	.735	.683	.636	.572
5	.952	.906	.863	.822	.784	.747	.681	.621	.567	.497
6	.942	.888	.838	.790	.746	.705	.630	.565	.507	.432
7	.933	.871	.813	.760	.711	.665	.584	.513	.452	.376
8	.924	.854	.789	.731	.677	.627	.540	.467	.404	.327
9	.914	.837	.766	.703	.645	.592	.500	.424	.361	.284
10	.905	.820	.744	.676	.614	.558	.463	.386	.322	.247
11	.896	.804	.722	.650	.585	.527	.429	.351	.288	.215
12	.887	.789	.701	.625	.557	.497	.397	.319	.257	.187
13	.879	.773	.681	.601	.530	.469	.368	.290	.229	.163
14	.870	.758	.661	.578	.505	.442	.341	.263	.205	.141
15	.861	.743	.642	.555	.481	.417	.315	.239	.183	.123
16	.853	.728	.623	.534	.458	.394	.292	.218	.163	.107
17	.844	.714	.605	.513	.436	.371	.270	.198	.146	.093
18	.836	.700	.587	.494	.416	.350	.250	.180	.130	.070
19	.828	.686	.570	.475	.396	.331	.232	.164	.116	.061
20	.820	.673	.554	.456	.377	.312	.215	.149	.104	.030
25	.780	.610	.478	.375	.295	.233	.146	.092	.059	.017
30	.742	.552	.412	.308	.231	.174	.099	.057	.033	.015
40	.672	.453	.307	.208	.142	.097	.046	.022	.011	.004
50	.608	.372	.228	.141	.087	.054	.021	.009	.004	.001

Worksheet E2.2c1----Long run estimation of Capital Outlay Expenditures under an ESY Plan.*

Budgetary period (Year)_____

Budget Code	Item Description	Traditional Plan (a)	Functional Relationship (b)	ESY Plan (c)	Net (a-c) (d)
Total					

* Use of this method and worksheet should probably be restricted to estimate for years 3 or 5 and beyond Worksheet E2.2a1 should be used for the first few years under an esy plan.

Section E2.3----PUPIL TRANSPORTATION

This classification covers the cost of transporting all public and non-public school students living two miles or more from school and students living less than two miles from school if they are to be subjected to hazardous conditions while walking to school, handicapped children, special inter-school transfer of elementary children and groups of students on special projects.

Transportation costs are related to the scope, magnitude, duration, and efficiency of transportation operations. Change in the transportation system and effort necessitated by implementation of a modified school calander may affect any or all of these.

The duration of operation is most obviously affected. It is related to the number of days on which school is open for instruction.

Changes in scope, magnitude and efficiency od operation are almost certain to occur. Their final levels or values are seen as dynamically determined in the effort to reconfigure the entire school operation under a new calander scheme. Transfer of pupils to repopulate attendance centers to achieve acceptable pupil : teacher ratios will likely increase the scope of operations. Likewise decisions determining the geographic proportion of the district to be accessed at various time affect the magnitude of operations. And efficiency is a function of the interactions affecting economies of scale, passenger mile cost etc.

The transportation budget simulation component of this model attempts to reflect outcomes of these relationships using rather spartan input. In the relationship:

$$B^{esy}_{trans} = CB^{trad}_{trans} + 1 - C\ T\ A\ R_1\ R_2\ B^{trad}_{trans}$$

B^{esy}_{trans} = Budget, transportation, esy----to be estimated

B^{esy}_{trans} = Budget, transportation, traditional----from budget

C = A constant % of B^{trad}_{trans} unrelated to other changes in the transportation over a fairly wide range. It is computed by going down the list of components of B^{trad}_{trans} assigning a percentage of each which is relatively constant then computein $C = \frac{wi}{B^{trad}_{trans}}$

T = Time: The proportion of the year school is in session for instruction. Computed $T = \frac{G}{G-1}$ with G representing the number of attendance groups.

A = Area: The proportion of the district being accessed by the transportation system at any given (average) time. If the whole district is accessed all the time W = 1. If only those n geographic area from which students are in attendance at a given (average) time are access then $W = \frac{G-1}{G}$, etc. with refinements.

$$R_1 = \text{increased assembly costs} = \frac{\frac{\text{Total student population}}{\text{schools operated}^{esy} - \text{school closed}^{esy}\ \frac{\text{stud. in closed school}}{\text{Total student pop.}}}}{\frac{\text{Total student population}}{\text{schools operated}^{trad}}}$$

$$R_2 = \text{increased transfer costs} = \frac{\text{Au Attendance per attendance center}^{esy}_{\text{grade K--n}}}{\text{Au Attendance per attendance center}^{trad}_{\text{grade K--n}}}$$

Worksheet E2.3(1)----Estimation of the constant (C)* for the transportation budget algorithm.

	Transportation Budget Components	Budgeted Amount (traditional)	Estimated % which is constant	Component Weight
i		Bi	Ci	Wi
1	Salaries & Wages			
2	Contracts			
3	Gasoline			
4	Oil			
5	Grease			
6	Tires			
7	Insurance			
8	Repairs			
9	Purchase of Vehicles			
10	Travel			
11	Rental of Vehicles			
12	Miscellaneous			
13	Other _____			
14	_____			
15	_____			
***	Total = i =		*********	

* $C = \frac{Wi}{Bi}$

Worksheet E2.3(2)----Data array and computation of the variables T, A, R_1, and R_2 in the transportation algorithm.*

G = Number of cohorts (attendance groups) = _____

B^{trad}_{trans} = Amount traditionally budgeted for transportation = _____

Pn; Total school student population (for relevant period) = _____

Pc; Total students from schools (attendance centers) being closed in implementing the esy plan = _____

Sc; Number of schools to be closed in implementing the esy plan = _____

Se; Number of schools to be operated under the esy plan = _____

St; Number of schools operated under the traditional plan = _____

* These data should be arrayed separately for portions of the school handled on differnet plan eg. traditional and esy.....

$Pt = \frac{Pn}{Se} =$

$Pe = \frac{Pn}{St} =$

$A = \frac{G-1}{G} =$

$T = \frac{G}{G-1} =$

$$R_1 = \frac{\frac{Rn}{Pn}}{Se - (Sc\ (Pc/Pn))} =$$

$$R_2 = \frac{\frac{Pn}{Se}}{\frac{Pn}{St}} =$$

Worksheet E2.3(3)----Computation of the esy transportation budget using the esy transportation algorithm.

$$B^{esy}_{trans} = CB^{trad}_{trans} + [1-C\ (T \cdot A \cdot R_1 \cdot R_2)]\ B^{trad}_{trans} =$$

Section E2.4----FIXED CHARGES

Included in this portion of the budget are rent payments, all forms of insurance, employer's contribution to Social Security and all contributions to the Retirement Funds for all employees, expenses of the hospital-surgical plan, group life insurance for all employees, chest x-rays and physical examinations required for all employees.

The degree to which line items in the Fixed Charges portion of the Budget vary as:

a. staff size varies
b. proportion of total facilities are used
c. proportion of year changes must be ascertained

Grouping of similar items will be helpful.

$$B^{esy}_{FC\ component} = \left[S\left(\frac{staff^{esy}}{staff^{trad}}\right)\left(B^{trad}_{FC\ component}\right)\right] + \left[P\left(\frac{F^{esy}}{F^{trad}}\right)\left(B^{trad}_{FC\ component}\right)\right] +$$

$$\left[Y\left(\frac{G}{G-T}\right)\left(B^{trad}_{FC\ component}\right)\right]$$

$$B^{esy}_{FC} = \sum B^{esy}_{FC\ component\ (1,\ 2,\ .....n)}$$

Worksheet E2.4(1)

Fixed Charges Budget Component	Relationship to.....		
	Staff Size	Proportion of Total Facilities Used	Proportion of the Year Used
	S	F	Y
Rent Payments			
Insurance			
Liability			
Fire			
Burglary			
Life			
Unemployment			
Boiler			
Equipment			
Other _____			
Social Security and Retirement Fund			
Rental of Instructional Equipment			
Employees Physical Examination			
Other _____			
_____			
_____			

Section E2.5----PLANT OPERATION

Operation consists of the housekeeping activities concerned with keeping the physical plant open and ready for use. It includes cleaning, heating, lighting, power, telephone service, handling supplies and caring for grounds.

The general problem in analyzing the budgetary components operations is determining the degree to which the use of each is constant and/or varies in accordance with the proportion of the year it is active. In addition it is necessary to determine the proportion of school facilities have been idled by year-round operations. It may be characteristic to actually place very little of the physical plant in mothballs. These are parameters which must be supplied if accurate estimates are to result.

Computation:

$$B^{esy}_{Op\ Cat} = P\left[C\left(B^{trad}_{Op\ Cat}\right) + \left(\left(\frac{G}{G-1}\right)\left(V\right)\left(B^{trad}_{Op\ Cat}\right)\right)\right] + A$$

Where:

$B^{esy}_{Op\ Cat}$ = Budget for a category (subset) of plant operations under the esy plan

esy = Extended school year or year-round school

trad = Traditional school year

P = Proportion of total facilities in use

C = Constant

$B^{trad}_{Op\ Cat}$ = Operational budgetary category (line item) under the traditional plan

G = Number attendance groups

V = Variable

A = Absolute Addition

+

Budgetary Component	% Constant	% Variable	Absolute Addition
Salaries			
Contract Services			
Custodial Supplies			
Heat			
Water			
Electricity			
Telephone			
Travel			
Miscellaneous			
etc.... whatever are the line items			
	The percentage of the budget item which would be used regardless of whether school is in session or not.	The balance =percentage to which item is variable with school being in session.	New Services not present in traditional school operation, i.e., electricity for air-conditioning.

Section E2.6----ADMINISTRATION OR GENERAL CONTROL

General Control consists of those activities which have as their purpose the general regulation, direction, and control of the affairs of the school district that are system-wide and not confined to one school, subject or narrow phase of school activity. These expenditures include the salaries of the Superintendent of Schools, Business Manager, Director of Purchasing-Transportation, and their clerical staffs; office supplies, postage, and other expenses pertaining to their offices; staff recruiting expenses, espenses of the annual school census, and the expenses of the Board of Education.

ADMINISTRATION OR
GENERAL CONTROL

Components: Administrators Salaries

Clerical Salaries

Audit

Data Processing

Contract Services

Supplies

Census

Transportation

Staff Recruiting

Printing &Publishing

Miscellaneous

Worksheet E2.6----Estimating the Administrative Budget for an ESY Plan.

Item Description	Budget Code	Amount in traditional budget (a)	Relationship * (b)	Net 1+b = (c)	Estimated ESY budget amount (d)
Total	******		**********		

* This coefficient should be expressed in terms of percent change relative to the amount required in the traditional school budget.i.e. +0.1 or -0.5. Frequently, but not invariably the change can be accounted for by one coefficient. If more than one is used try to avoid duplication in summing them into (b).

Section E2.8----OTHER SCHOOL SERVICES

Commercial Services

Including:

a. Health Service

b. Food Service

c. Interscholastic Athletics

d. Other Student Activities

e. Sales

f. Community Services

Analysis of activities in these budgetary categories is complicated (or simplified) by the fact that they are generally expected to generate offsetting revenues. To the extent that this is accomplished changes in their magnitude are of little concern in considering alternative school schedules.

Two approaches are possible. One is to assume that the policy of generating offsetting revenues is successfully implemented. In this case, these components are removed from the traditional and year-round budgets being compared without further ado. The other approach is to perform conventional analysis of each item and then ask whether or to what extent the activity will generate offsetting revenue. To the degree that offsetting revenue is not generated that activity must be included in the budget analysis. It may well be that an activity which is self-supporting under the traditional operation will have to be 'subsidized' for a time under year-round operations. In Food Service, for instance, economy of scale might be adversely affected by fixed costs, additional waste, and accelerated repair and replacement. If less or lower quality food or higher prices for lunches could not make up the difference it would have to be added to the cost of year-round operations.

On balance, however, it may be well to ignore the effect of Commercial Services upon the Total Budget during at least preliminary stages of comparison of year-round and traditional programs.

Commercial Services Categories

Food Service
Salaries
Food
Supplies
Travel
Repair and Replacement

Interscholastic Athletics
Salaries
Supplies and Materials
Travel
Repair of Equipment
Insurance
Tournament Expenses

Commercial Services Categories - cont.

Other Student Body Activities
Salaries
Supplies and Materials
Travel
Student Commons

Sale Accounts
Materials and Workbooks for resale

Section E2.8a----HEALTH SERVICE

This budget component is small enough that its being doubled or cut in half (unlikely events) by a switch to a year-round program would be almost unnoticeable in comparison with other budgetary changes.

Health Services at fewer sites might result in miniscule savings in inventory.

Travel to service (perform examinations or observe) the students missed because they were on vacation might increase a small amount. But most probably return visits to service students missed because of absence is already a part of the health service program.

Salaries might increase or decrease. If a single (one) person is presently employed for a shorter period (9 or 10 months) than would be required by a year-round program an increase more or less proportional to the increase in time could be expected. This might be as much as 33%. If, however, two full year employees could handle a job currently requireing three 9-month employees a savings of 25% might occur...and so on.

Computation of the effect of changes in the Health Service Budget can be accomplished as follows:

Health Services cont.

A. Free form (judgement or intuition)

Perhaps the most sensible approach to estimating the Health Services Budget under an ESY plan is to pre-empt a detailed analysis with a cursory examination of the situation of the sort indicated in the paragraph above.

B. Compute

$$B^{esy}_{\text{Health Ser. Cat.}} = 1 + \frac{G}{G-1} - \frac{\text{Est. student days per year}^{esy}}{\text{Est. student days per year}^{trad}}$$

Example: $1 + \frac{4}{4-1} - \frac{1000}{1000}$

$1 + \frac{4}{3} - 1$

$2\frac{1}{3} - 1$

$4/3$

Or:

C. Computation of the effect of changes in the Health Service Budget might be accomplished as follows:

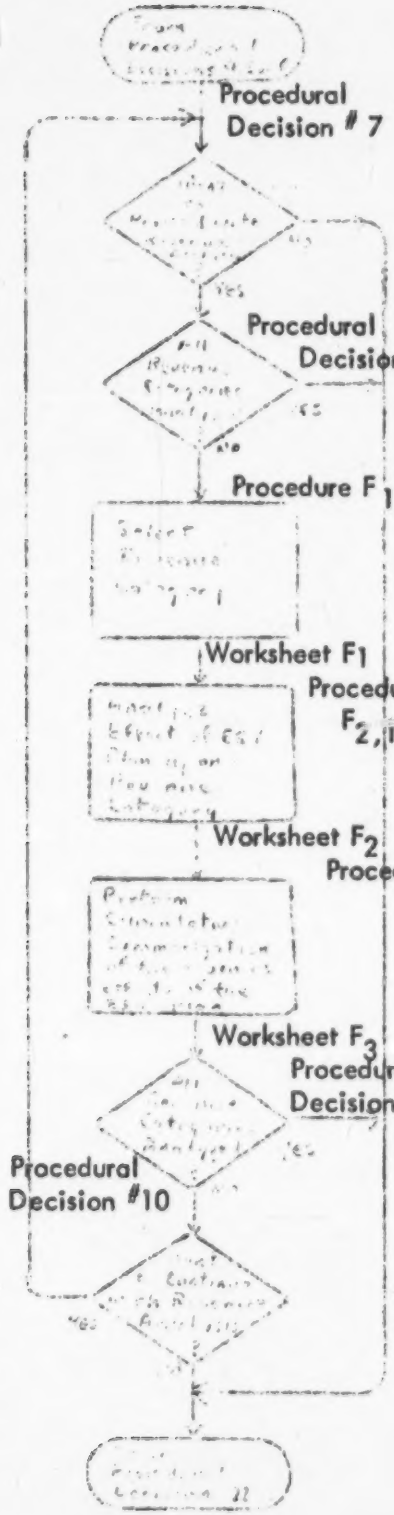
$$B^{esy}_{H} = \frac{\text{Supplies}^{esy}}{\text{Supplies}^{trad}} \cdot \frac{B^{trad}_{\text{Health supplies}}}{B^{trad}_{tot}} + \frac{\text{Travel}^{esy}}{\text{Travel}^{trad}} \cdot \frac{B^{trad}_{\text{Health travel}}}{B^{trad}_{tot}}$$

$$+ \frac{\text{Salaries}^{esy}}{\text{Salaries}^{trad}} \cdot \frac{B^{trad}_{\text{Salaries}}}{B^{trad}_{tot}}$$

Worksheet E2.8----Estimating the Budget for Other Services under the ESY Plan

Item Description	Budget Code	Amount in traditional budget (a)	Relationship * (b)	Net 1+b= (c)	Estimated ESY budget amount (d)
Total	******		**********		

* This coefficient should be expressed in terms of percent change relative to the amount required in the traditional school budget. i.e. +0.1 or -0.5 Frequently, but not invariably, the change can be accounted for by one coefficient. If more than one is used try to avoid duplication in summing them into (b).



Procedures F----Analysis of Budgetary Revenue Categories

PD 7 The user (if favorably impressed with the expected cost of the ESY plan) may elect to undertake analysis of the income effects of the plan.

PD 8 When all revenue categories have been evaluated move on to Procedural Decision #11.

F_1 See Subsection F_1. Revenue categories are ordered in terms of decreasing sensitivity to an ESY plan.

$F_{2.n}$ See Subsections as defined. Detailed analysis of the effect of an ESY plan upon various revenue categories.

F_3 See Subsection F_3. Cumulative summarization of the impact of the ESY plan upon revenue from various sources.

PD 9 When all revenue categories have been evaluated move on to Procedural Decision #11.

PD 10 As with expenditure analysis the user may pursue revenue analysis to the point at which all revenue categories sensitive to the ESY plan have been analyzed.

PART VIII: ANALYSIS OF THE IMPACT OF THE ESY PLAN UPON REVENUES

Procedures F_1, F_2 and F_3

A collection of routines for analysis of the effect of the ESY plan upon the various budgetary revenue categories.

PART IX: RE-AUGMENTING THE ESY PLAN

Procedure G

Materials to prompt the 'adding back' of expenditures and revenues to replace summer school, etc., if removed in Procedure D.

PART X: IMPLEMENTATION

Procedures $I_1, I_2 \ldots I_n$

Envisioned as materials and service useful once a decision to implement an ESY plan has been made. The only SWREC activity in this area at present is associated with identifying and securing relevant materials. (To be developed at a later date)

PART XI: EVALUATION

Procedures $J_1, J_2 \ldots J_n$

These more general capabilities will be developed independent of ESY activities. They will be useful nonetheless in evaluating ESY operations which are actually implemented.

PART XII: GENERAL APPENDIX AND ATTACHMENTS

Contents

K1 (K1.1, K1.2 . . . K1.n)	Bibliographies
K2 (K2.1, K2.2 . . . K2.n)	Critical Analysis and Position Papers
K3 (K3.1, K3.2 . . . K3.n)	Other Supporting Documents, i.e., Legal Implications of ESY

PART XIII: INDEX

This section will be tabulated and made available if and when the need for it seems justified by experience with the ESY Analysis Aids.